

# Draft Environmental Impact Statement



## Volume I Summary Chapters 1-6

**St. Louis County, Missouri**



U.S. Department  
of Transportation

**Federal Highway  
Administration**

April 2013

# South County Connector

St. Louis County, Missouri

## Draft Environmental Impact Statement

Submitted Pursuant to 42 U.S.C. 4332 (2) (c)  
and 49 U.S.C. 303

by the

**U.S. Department of Transportation,  
Federal Highway Administration  
and  
Missouri Department of Transportation  
and  
St. Louis County, Missouri**

**COOPERATING AGENCY:  
U.S. Army Corps of Engineers**

April 22, 2013  
Date of Approval

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For St. Louis County, Missouri

April 22, 2013  
Date of Approval

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Date of Approval

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St. Louis County, Missouri (County), in cooperation with the Federal Highway Administration (FHWA) and the Missouri Department of Transportation (MoDOT), has completed this Environmental Impact Statement (EIS) for a proposed transportation improvement project referred to as the South County Connector. This roadway project includes construction of a new roadway, primarily on new alignment through a portion of central St. Louis County. The study corridor begins on Hanley Road near Flora Avenue and continues south and east through Deer Creek Center adjacent to Deer Creek to a new intersection with Big Bend Boulevard. At this point, the no build and two build alternatives are being analyzed: one alignment extends through the Big Bend Industrial Court and the other alignment bisects the Laclede Gas Property. A full interchange at Interstate 44 is included as a part of the project. South of the new Interstate 44 interchange, the South County Connector would continue south through the west side of the Shrewsbury MetroLink Station property, connecting into River Des Peres Boulevard. To accommodate future traffic demands and reduce predicted delays, interchange improvements at Watson Road and River Des Peres Boulevard are included as part of the project. The final selection of an alternative will be made after considering comments from other federal, state and local agencies and the public as a part of the Draft EIS reviews and public hearing process. The preferred alternative will be presented in the Final EIS.

Comments on this Draft EIS are **due by Friday, July 19, 2013** and should be sent to:

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# Summary

St. Louis County, Missouri (County), in cooperation with the Federal Highway Administration (FHWA) and the Missouri Department of Transportation (MoDOT), has completed this Environmental Impact Statement (EIS) for a proposed transportation improvement project, referred to as the South County Connector. The project location map is depicted in Figure 1. This EIS describes existing problems in the project area, discusses development of alternatives, examines potential impacts of the alternatives considered, and identifies potential mitigation measures for unavoidable impacts. A preferred alternative is the alternative that best meets the project purpose and need, balances the benefits and impacts of the project, and is responsive to public and agency comments. Therefore, the final selection of an alternative will not be made until after considering comments from other federal, state and local agencies and the public as a part of the Draft EIS reviews and public hearing process. The preferred alternative will be presented in the Final EIS.

## PROJECT HISTORY

A plan for an improved connection from south St. Louis County to central St. Louis County has existed since the late 1950s. The original concept was for a freeway “inner belt expressway” to provide better north-south access through the St. Louis suburbs. This freeway concept resulted in Interstate 170, north of Interstate 64/U.S. Route 40. Originally, Interstate 170 was proposed to continue south into the southern part of St. Louis County to provide improved access between Interstates 44, 55, and 64. After much deliberation, area leaders decided in the 1990s not to pursue a southward extension of Interstate 170 due to significant disruption of neighborhoods. Although this option was abandoned, St. Louis County, the Missouri Department of Transportation (MoDOT), and other local agencies continued planning efforts to identify potential options for north-south access improvements in south and central St. Louis County.

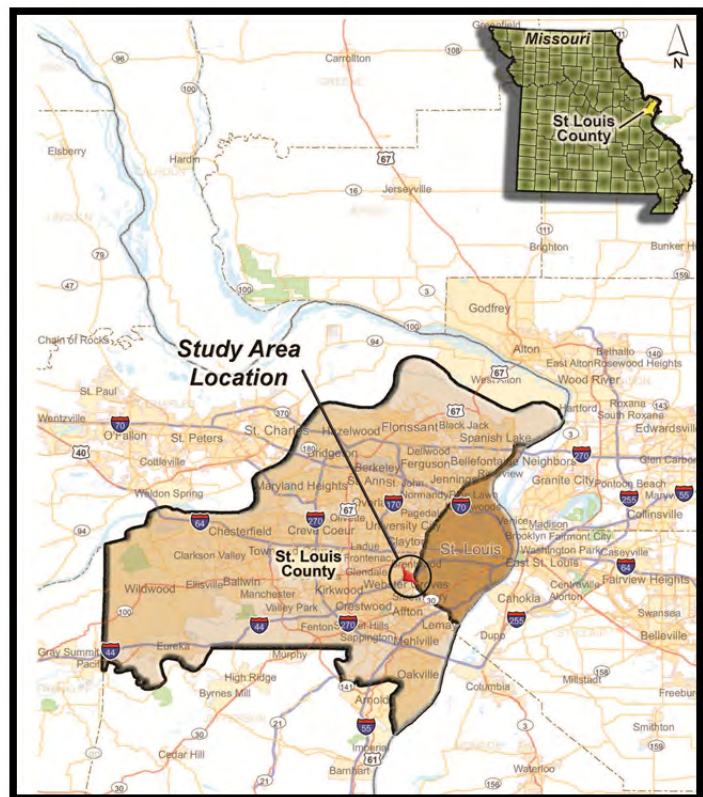


Figure 1: Location Map

The previous planning studies focused on roadway and transit improvements from a regional perspective, as well as localized projects to improve access in the County. These studies encompassed a wide range of study areas that varied based on the specific goals of the sponsoring agencies. The one commonality among the studies, however, was the need to address north-south access improvements in the County.



Based on the recommendations from the previous studies, St. Louis County identified the South County Connector as a high priority project that should be carried forward to the next stage of analysis, which has led to the development of this EIS.

## CORE STUDY AREA

The project core study area includes parts of four municipalities: Shrewsbury, Maplewood, Webster Groves, and St. Louis City, as depicted in Figure 2. The project limits are generally bounded by Manchester Road to the north, Hanley Road and Laclede Station Road to the west, Murdoch Avenue and Watson Road to the south and Big Bend Boulevard and River des Peres to the east. Interstate 44 bisects the project study area.

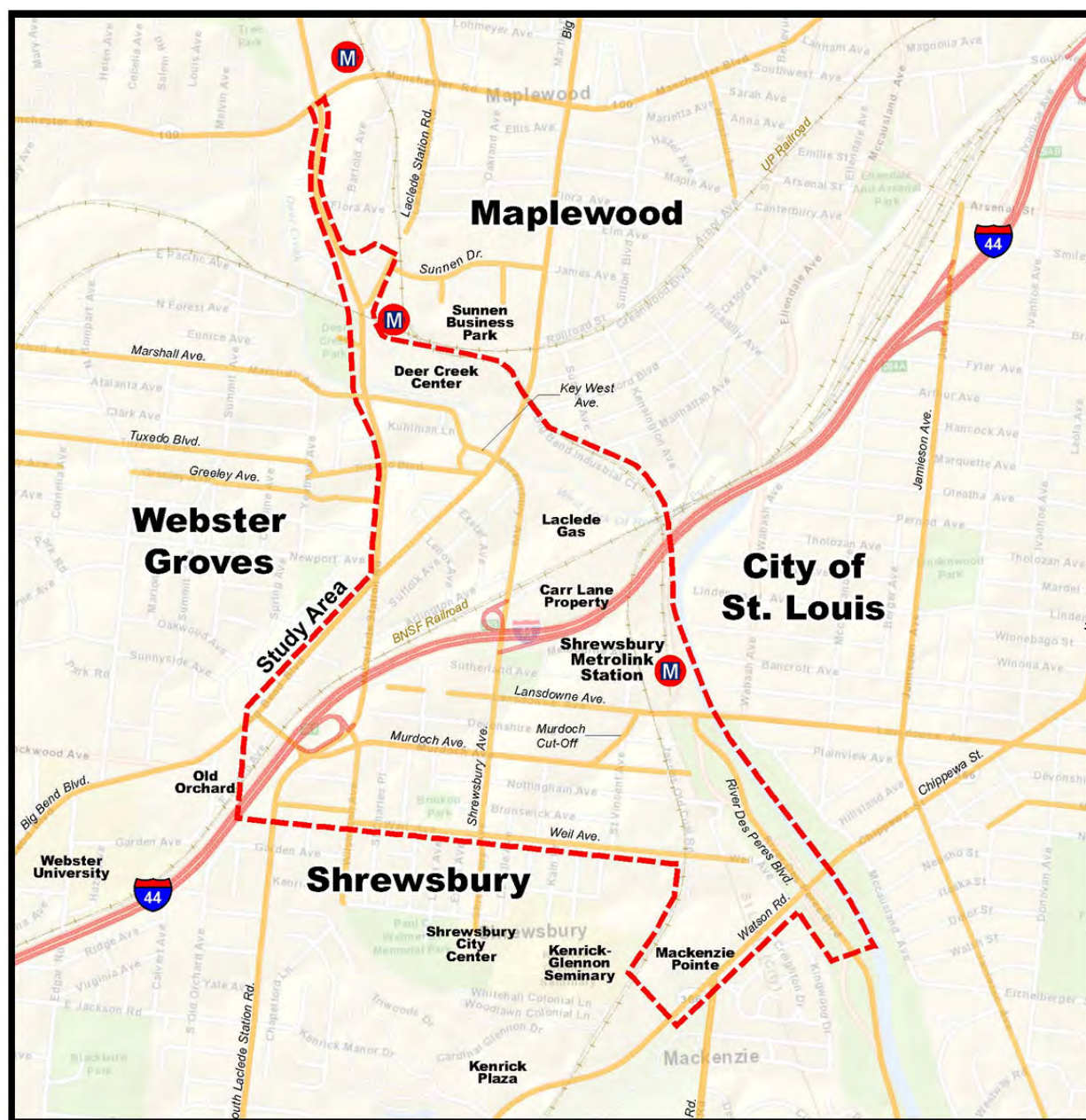


Figure 2: Study Area Map



## PURPOSE AND NEED

Purpose and need refers to the transportation-related problems of a system that a project is intended to address. It identifies the need for improvements and justification for why a project is necessary. The purpose and need of a project is essential in establishing a basis for the development of the range of reasonable alternatives required in an EIS and assists with the identification and eventual selection of a preferred alternative.

The purpose of the proposed project is to improve connectivity, reduce congestion, and improve safety within the South County Connector study area. The proposed improvements would address several needs:

- Improve roadway connectivity between south St. Louis County, south St. Louis City, and central St. Louis County, improve access to Interstate 44, and facilitate improved access to Interstates 55, 64, and 170
- Reduce congestion on the roadway network (such as Shrewsbury Avenue, Lansdowne Avenue and Murdoch Avenue) and improve traffic conditions for the adjacent residential neighborhoods
- Provide transportation system capacity to respond to current and reasonably foreseeable travel demand in the region
- Improve safety throughout the roadway network through a more efficient transportation system

## ALTERNATIVES

The alternatives produced by this study are the result of an extensive public and agency coordination process, combined with environmental and technical analyses. There were a wide range of initial alternative concepts considered as a part of the EIS process. Many of the concepts were derived from some of the earlier planning studies in the project area. No Build, Transportation System Management (TSM) and five Build Alternative corridors were considered and put through a two-stage screening process designed to determine which alternatives to retain for detailed analysis.

### *Initial Screening*

The alternatives were first screened for how well they could meet the study's purpose and need. Table 3-2 on page 3-6 of the Draft EIS depicts the results of the initial screening process. The five proposed roadway corridors, as well as No Build and Transportation System Management (solutions such as improved signal timing), were evaluated for their ability to:

- Improve north-south access
- Improve interstate access
- Reduce congestion on existing roadway network
- Reduce delays at existing intersections
- Improve traffic conditions on residential neighborhoods
- Provide capacity to meet current and future travel demand
- Improve safety at high accident locations

This initial screening also included how well the corridors could address other goals, such as leveraging transit and economic development opportunities. Based on the results of initial screening, the River Des Peres Boulevard and South Outer Road corridors advanced to secondary screening; the remaining corridors were eliminated.

### ***Secondary Screening***

The River Des Peres Boulevard and South Outer Road corridors then underwent a secondary screening process, where they were compared against one another relative to social and economic impacts, environmental impacts, and feasibility to construct. There were multiple criteria in each category. For instance, social and economic impacts included right-of-way, residential relocations, business relocations, environmental justice, community cohesion, changes in access, and economic development opportunities. Table 3-3 on page 3-11 of the Draft EIS depicts the results of the secondary screening process.

### ***Alternatives Carried Forward for Detailed Analysis***

Based on results from both the initial and secondary screenings, it was determined that the River Des Peres Boulevard Corridor would be carried forward into detailed analysis. Accordingly, the study area was revised to incorporate this corridor as shown in Figure 3 (new study area is shaded in gray; the original study area boundary is in orange). This corridor alternative was divided into the following sections, which are also depicted in Figure 3:

*Northern Section* – An alignment north of Deer Creek through Deer Creek Center was carried forward for further analysis.

*Central Section* – Alignments through the Big Bend Industrial Court and through the Laclede Gas property will both be carried forward for detailed study. An option for a new full interchange with Interstate 44 was also carried forward.

*Southern Section* – An alignment that runs through the Shrewsbury MetroLink Station parking lot was carried forward for further analysis.

*Southern Terminus* - An alignment that connects directly to River Des Peres Boulevard was carried forward and also included considerations for improved connectivity to Mackenzie Road.

Even though the No Build Alternative does not meet the purpose and need of improving north south connectivity, reducing congestion, or improving safety, this alternative was carried forward for further evaluation in the EIS and serves as a benchmark against which the impacts of other alternatives can be compared.



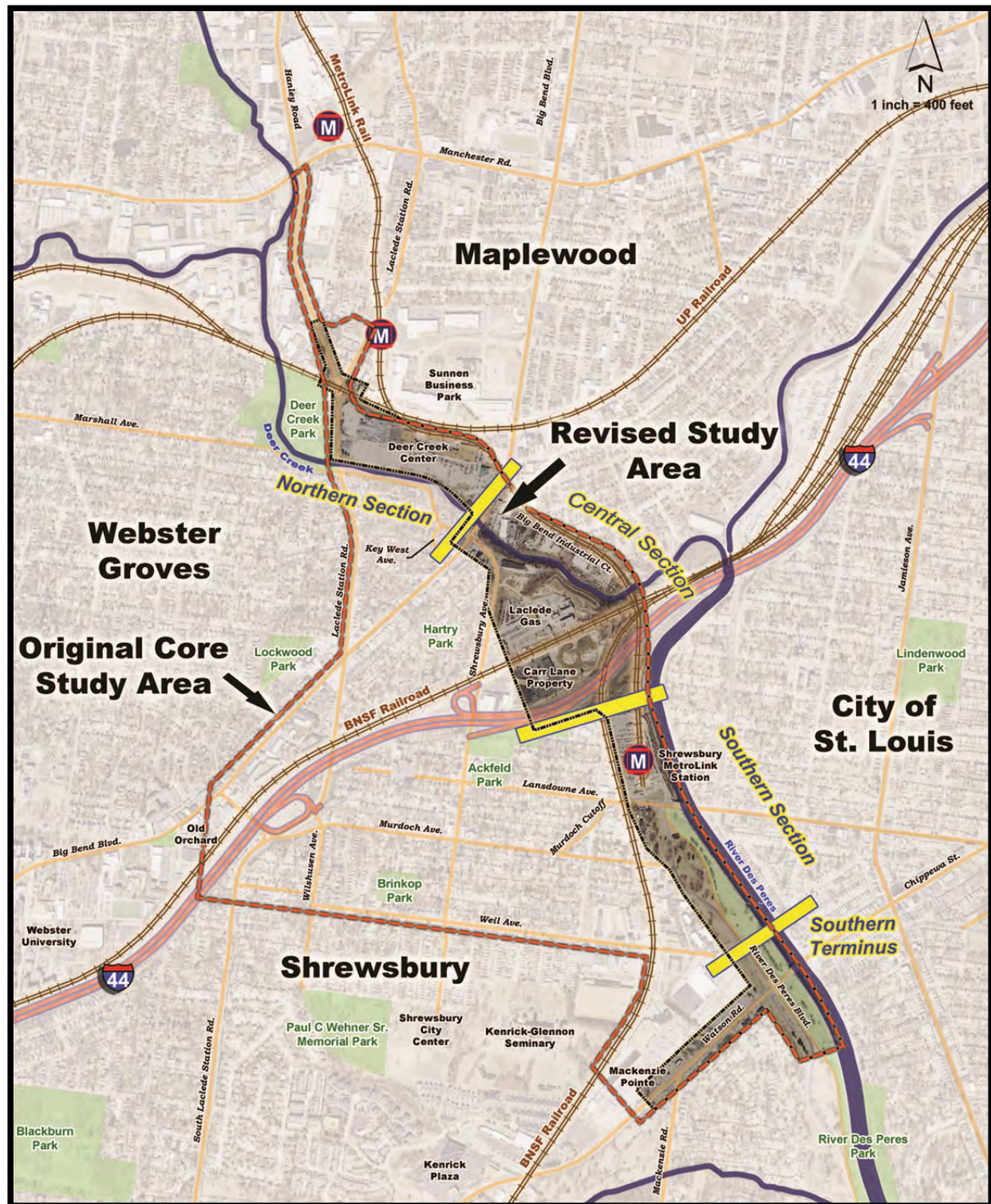


Figure 3: Revised Study Area

## TRAFFIC STUDIES

Once the alternative corridors were narrowed to the River Des Peres Boulevard Corridor, more detailed traffic studies were conducted, which included a travel demand model to determine the changes to regional travel patterns caused by the proposed action. The travel demand model is maintained by the East-West Gateway Council of Governments (EWGCOG). EWGCOG uses the CUBE Voyager<sup>1</sup> model platform for highway modeling. This program incorporates socioeconomic data and the highway network to estimate traffic demands. Three scenarios were analyzed: No Build, Low-Build (4-Lane Road, 40 mph design speed) and High-Build (6-Lane Road, 45 mph design speed). The modeling revealed several consequences of building the South County Connector:

- Traffic will decrease on several area roadways including Marshall, Lansdowne and Shrewsbury Avenues.
- Reductions in traffic would occur along major north-south corridors within the City of St. Louis, including Watson Road and Hampton Avenue.
- The project causes minimal increases in traffic on River Des Peres Boulevard and Mackenzie Road.
- The project will increase traffic on Hanley Road, north of the study area, with a bottleneck forming at Interstate 64 regardless of which build alternative is selected.
- Traditional at-grade intersections may not be adequate to handle future traffic due to heavy turning movements to/from the South County Connector.
- The High-Build and Low-Build options provide reductions in delay over the No-Build option.
- Because the High-Build option does not provide significant benefits over the Low-Build option, the Low-Build is recommended.

## REFINEMENT OF ALTERNATIVES

Refinement of the alternatives included development of preliminary engineering concepts for each section within the revised study area. Each section was evaluated independently and the various options can be interchanged within the project corridor. Following is a summary of the alternatives refinement and recommendations and/or comments for each section analyzed:

- As part of the Northern Section, the recommended option is to add two traffic lanes to the existing four-lane section to tie into the proposed Hanley Road improvements north of the project limits. These new lanes would be constructed on the other side of the piers of the existing Union Pacific railroad bridge. Replacement of the bridge and bridging over the existing bridge were also considered.
- Several options are feasible for the South County Connector intersections with Laclede Station Road and Big Bend Boulevard, and footprints have been analyzed that could accommodate each of the intersection types studied. Future development may drive the final configuration of both of these intersections.
- A route through the Laclede Gas property that essentially bisects the parcel, as identified by Laclede Gas, would minimize the impact to their operations. A route that

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<sup>1</sup> FHWA's Travel Model Improvement Program, [http://media.tnmponline.org/clearinghouse/tmip/peer\\_review/evaluation/evaluation.pdf](http://media.tnmponline.org/clearinghouse/tmip/peer_review/evaluation/evaluation.pdf)



follows Big Bend Industrial Court is also carried forward for detailed analysis, with minimal impacts to the Laclede Gas property.

- A full interchange at Interstate 44 is recommended as part of the South County Connector project. MoDOT would ultimately own and maintain the proposed interchange. The interchange configuration would be determined by MoDOT in coordination with FHWA. A draft Access Justification Report will be submitted to FHWA for conditional approval. A final version will be prepared when an interchange type is determined. While a full interchange is recommended by this EIS, a separate study process will determine its configuration. However, as a part of the EIS process, a footprint, the physical area in which the project would be contained, has been determined that would accommodate various full interchange types. The partial interchange at Shrewsbury Avenue would be eliminated.
- A grade separated intersection is recommended at the intersection of Lansdowne Avenue and the South County Connector. An at-grade intersection would not perform as well and would be difficult to construct due to the proximity of the railroad.
- It is recommended that the compressed cloverleaf interchange at River Des Peres Boulevard and Watson Road be reconfigured to incorporate a traffic signal on Watson Road at the northbound River Des Peres Boulevard ramps. These improvements would reduce delays and improve access to Watson Road and Mackenzie Avenue.

While these alternatives are found to be the most advantageous for fulfilling the project's purpose and need, the design process may ultimately determine the final design for the South County Connector. The solutions proposed by this EIS represent the worst-case yet reasonable scenario for likely impacts of the project. The footprint developed for the EIS covers a range of reasonable options that might be proposed in the design process.

From the preceding analysis, two options were developed and carried forward for detailed analysis in the EIS. These alternatives are identified as Build Alternative 1 and Build Alternative 2. The main difference between the alternatives is in the Central Section. Build Alternative 1 bisects the Laclede Gas property and Alternative 2 extends through the Big Bend Industrial Court area. Build Alternatives 1 and 2 are depicted in Figure 4 and Figure 5, respectively. The footprints that are being analyzed in this EIS for the Northern and Southern Sections are the same for both of the Build Alternatives. The footprint areas are sufficient to accommodate the various options as discussed previously.

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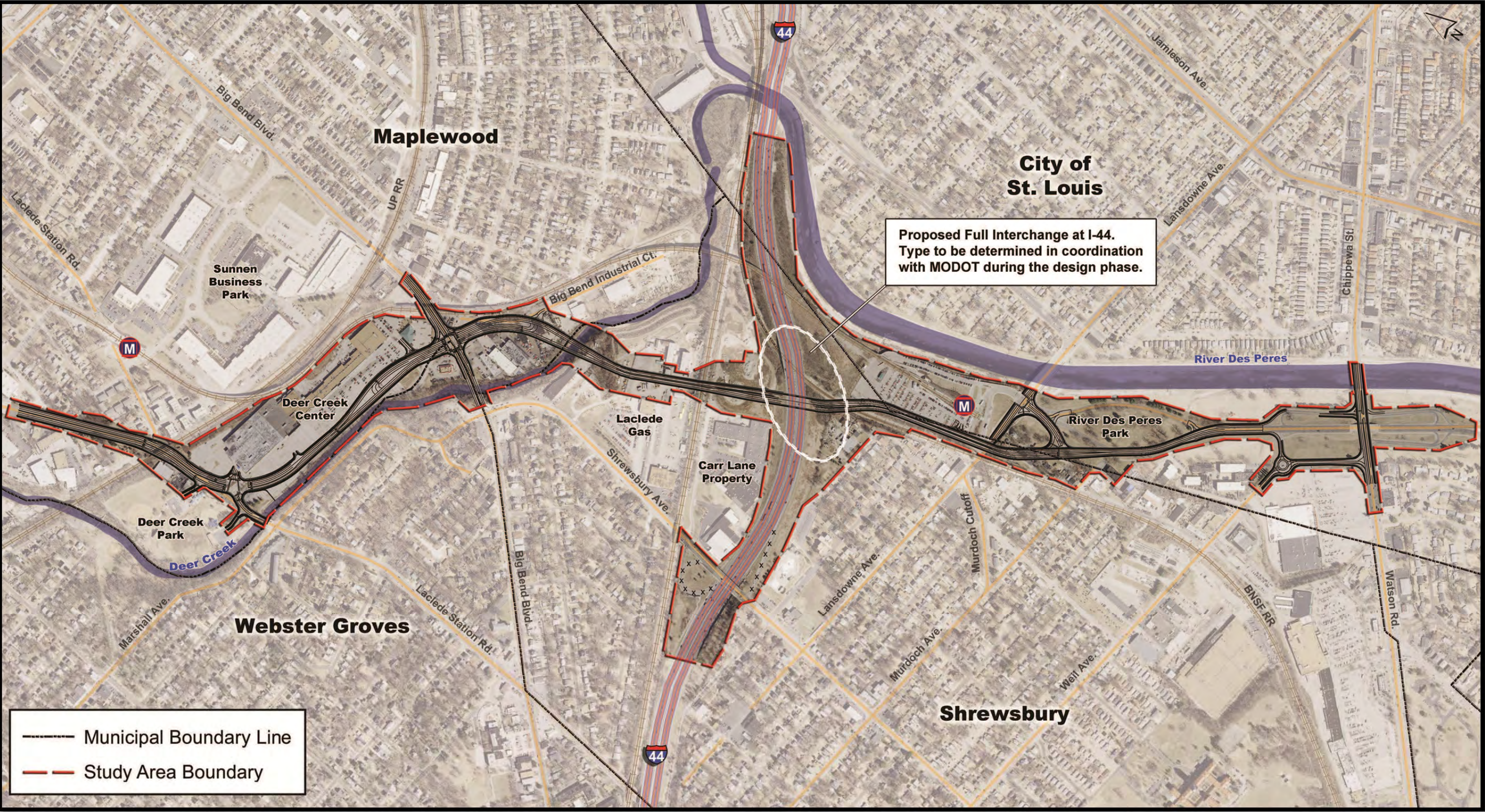


Figure 4: Build Alternative 1







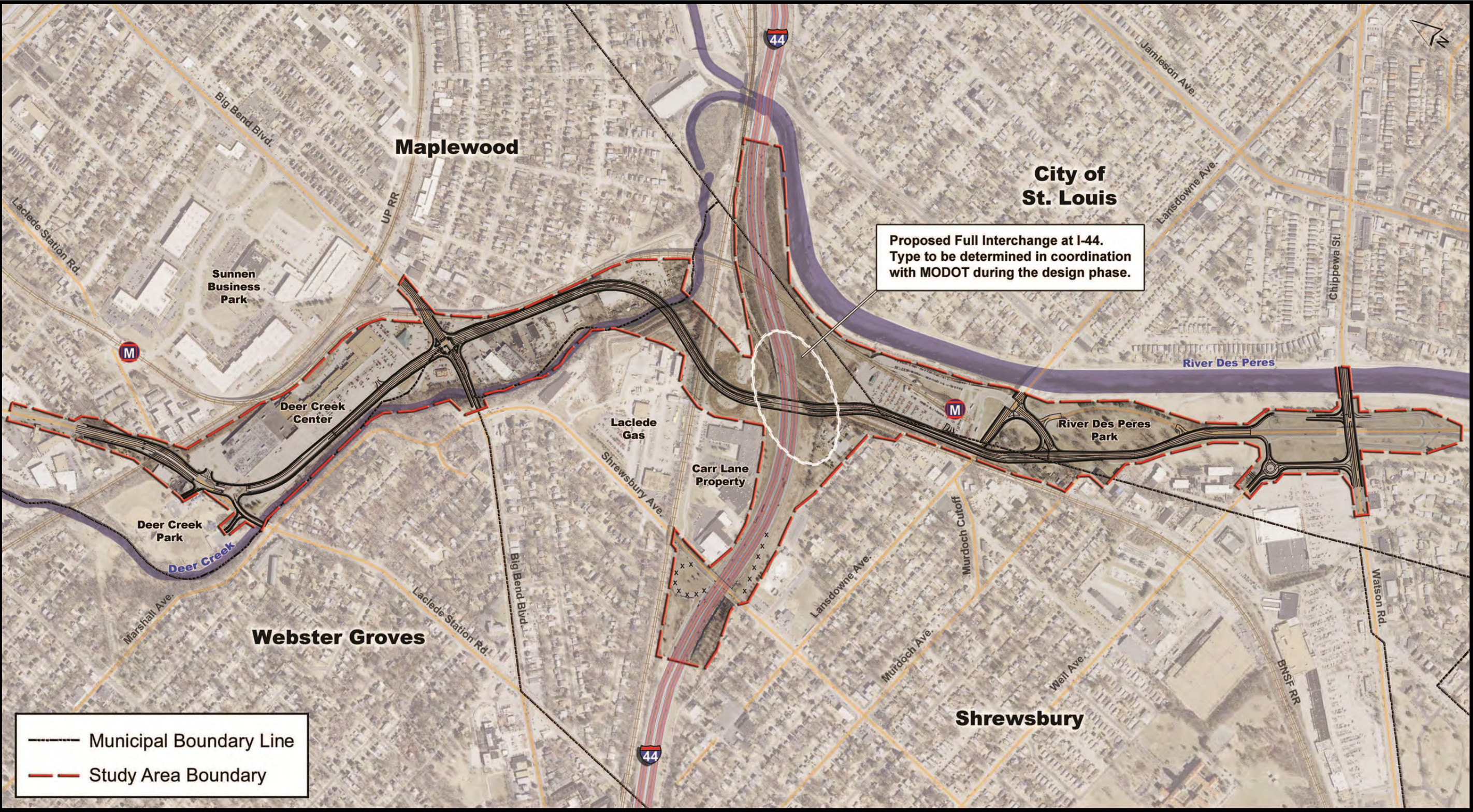


Figure 5: Build Alternative 2





## SUMMARY OF IMPACTS

The alternatives carried forward for detailed analysis were evaluated for probable social, economic, and environmental impacts, both adverse and beneficial. The analysis first looked at the affected environment, including the existing conditions, regulations and/or policies pertinent to the specific resource. The direct impacts to each of the studied resources - and measures for avoiding, minimizing or mitigating impacts - were presented. Indirect and cumulative impacts were analyzed separately. The following table summarizes the impacts to the studied resources:

**Table 1: Summary of Alternatives**

Resource	Potential Impacts		
	No Build	Build Alternative 1	Build Alternative 2
<b>Engineering Factors</b>			
Lengths of Build Options (feet)	0	9,800	10,100
Estimated Project Costs (\$millions)	0	\$109.57	\$111.39
Traffic Operations	No Improvement	Improves connectivity and safety, reduces delays	Improves connectivity and safety, reduces delays
<b>Social and Economic Impacts</b>			
Right-of-Way Acquisition (acres)	None	39.7	43.2
Residential Displacements	None	8	8
Business Displacements	None	19	21
Environmental Justice	None	No Impact	No Impact
Changes in Travel Patterns	None	Major	Major
Multi-Modal Considerations	No Benefit	Benefit	Benefit
<b>Land Use Types within Study Corridor (acres)</b>			
Industrial	0	25.3	31.2
Commercial	0	30.3	30.3
Single-Family Residential	0	2.7	2.7
Multi-Family Residential	0	0.0	0.0
Parks	0	9.5	9.5
MetroLink	0	17.0	17.8
Other/Right-of-Way	0	67.2	68.5
<b>Environmental Resources</b>			
Air Quality	No Benefit	Benefit	Benefit
Noise (Estimated Receptors Approaching or Exceeding Noise Abatement Criteria)	NA	43 Single Family	55 Single Family
	NA	7 Multi-Family	13 Multi-Family
Floodplains (acres filled)	0	1.5	1.2
Floodway (acres)	0	1.5	1.2
Wetlands (acres filled)	0	0.26	0.26
Natural Areas	None	None	None
Threatened or Endangered Species	NA	Low Potential for Indiana Bat	Low Potential for Indiana Bat
Cultural Resources	None	3 Adverse Impacts	2 Adverse Impacts
Potential Hazardous Waste Sites	None	15 Potential Sites	16 Potential Sites
Section 4(f) Properties Estimated Acres/Number of Parks Affected	None	3 acres from 2 parks	3 acres from 2 parks

Primary impacts associated with the Build Alternatives include acquisition of land and structures from residences and businesses, floodplain/floodway impacts, wetland impacts, noise impacts, hazardous waste sites, potential cultural resource impacts, and Section 4(f) impacts. Benefits include improved community cohesion, multi-modal connectivity, changes in travel patterns, which will reduce traffic in residential neighborhoods, air quality benefits associated with reduced congestion and delays, and potential economic impacts.

## **AREAS OF CONTROVERSY**

During the EIS process, extensive public outreach activities took place to obtain feedback regarding the project. This outreach included public, agency, and stakeholder meetings; neighborhood meetings and presentations; open house meetings; project newsletters; and a project website. Specifically during the alternatives analysis, an agency briefing, two consecutive open house public meetings, and follow-up community and stakeholder presentations were conducted to present the preliminary alternatives. A collaboration meeting was also held with the participating agencies to present the recommended alternatives to be retained for detailed analysis. As a part of the outreach conducted during the EIS process, the following areas of potential controversy, or concern, were raised:

### ***Minimize Impacts on the Residential Areas***

As a part of the open house public meetings during the scoping process and the alternatives open house meetings, many comments were received in regard to minimizing impacts on residential properties and in neighborhoods. During the public scoping process, the public was given the chance to identify factors that the study team should consider in the development of the EIS and preliminary alternatives. The top category of responses was social impacts – specifically, residential and community impacts. Comments demonstrated support for neighborhood preservation and transportation alternatives that would have minimal impacts on residential properties, property values, and community character. Potential increased traffic through residential neighborhoods was also a primary concern.

As a part of the two public open house meetings to present the preliminary alternatives, more than 500 comment forms were received. Most favored the River Des Peres Boulevard corridor over the other potential alternatives due to fewer residential impacts and minimal community impacts. None of the other four corridor alternatives received more than 10 percent of the responses for first choice. As part of the alternatives analysis, public input was one of many factors taken into consideration. As previously indicated, the River Des Peres Boulevard Corridor was carried forward into detailed analysis in the EIS.

### ***Accommodate Bicyclists and Pedestrians***

Another key issue raised as a result of the public outreach and agency coordination of the EIS process was related to multi-modal opportunities that could be considered in the project area. Bicycle and pedestrian advocates have expressed the desire for incorporating design features within the South County Connector project that would encourage more biking and walking, and improve access to multi-modal options. Some suggestions included bike lanes, wide outside shared lanes, sidewalks, trail connectivity, improved traffic signal timing to accommodate pedestrians, reduced design speed, and other traffic calming methods.

Bicycle and pedestrian movement, access, and routes have been, and will continue to be, an integral part of the South County Connector project. During the design process, the County will



continue to coordinate with the participating agencies to assess appropriate transit, bicycle and pedestrian access within the corridor.

### **Logical Termini**

During the early agency coordination meetings as a part of the EIS process, the city of St. Louis recommended that the South County Connector study area include the entire River Des Peres Boulevard corridor to Interstate 55 due to the anticipated additional traffic that would be generated. The City indicated that there are existing safety concerns along River Des Peres Boulevard south of Watson Road, including narrow travel lanes, deficient horizontal curves, and poor drainage. To address these concerns, St. Louis County will support the St. Louis Department of Streets in their efforts to secure funding for drainage and safety improvements to River Des Peres Boulevard; however, these improvements would be independent of the South County Connector project.

Based on the traffic studies conducted during the EIS process, the level of service was computed at the major intersections along River Des Peres Boulevard for both the Build and No Build scenarios. The only intersection that showed a substantial drop in level of service was at the Watson Road Interchange. Therefore the southern terminus of the South County Connector project was extended to include interchange improvements at Watson Road, Weil Avenue, and River Des Peres Boulevard. Improving the interchange and intersection access at Weil Avenue would significantly improve the capacity and reduce potential delays at this location. These improvements would also facilitate improved access to and from Mackenzie Road, one of the routes for those traveling through the South County area. By providing improved access to Watson Road and Mackenzie Road, traffic levels on River Des Peres Boulevard, south of the Watson Road interchange, are not anticipated to substantially increase when compared to the No Build Alternative.

Safety and drainage improvements may be needed along sections of River Des Peres Boulevard. These improvements to River Des Peres Boulevard have “independent utility,” meaning that the project would be “usable and be a reasonable expenditure even if no additional transportation improvements in the area are made.”<sup>2</sup> Furthermore, the South County Connector, with the southern terminus of the project located at the River Des Peres Boulevard and Watson Road interchange, also has independent utility.

## **UNRESOLVED ISSUES**

The potential impacts of the Build Alternatives have been assessed, evaluated and compared in sufficient detail to characterize the degree of impact and the relative differences of the alternatives. However, for some resources, more detail is necessary to accurately identify the impacts of the project and better define the improvements, particularly regarding the design features. More detailed investigations will be conducted during the design phase to resolve each of these issues.

**Interchange Type** – A new full interchange at Interstate 44 is recommended as a part of the South County Connector project. Conceptual alternatives were analyzed for various interchange types. Each of the interchange types studied within the EIS operates at an acceptable level of service. MoDOT would ultimately own and maintain the proposed interchange, and therefore would likely fund this component of the project. The interchange configuration would be determined by MoDOT and FHWA. Therefore, no specific recommendations on the type of

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<sup>2</sup> 23 CFR § 771.111(f)

interchange are provided at this time. However, as a part of the EIS process, a footprint has been assessed such that the various types of interchanges evaluated could be accommodated.

**Section 106 and Section 4(f) Processes** – There are 13 cultural resources in the Area of Potential Effect (APE), of which four of the properties would be affected as a result of the Build Alternatives. Of these resources affected, three properties would have an adverse effect under Build Alternative 1, and two resources would have an adverse effect under Build Alternative 2. The appropriate measures to mitigate the impacts to the historic resource(s) will be determined through consultation among the State Historic Preservation Officer (SHPO), FHWA, and the County. A Draft Memorandum of Agreement (MOA) has been prepared that describes the specific mitigation measures to be implemented is required to resolve adverse effects. The Section 106 documentation, including a copy of the Draft MOA, will be coordinated with the Advisory Council on Historic Preservation. The MOA must be executed and included in the FEIS before FHWA can issue a Record of Decision.

A Draft Section 4(f) Evaluation has been prepared for the recreational facilities and cultural resources that would be impacted by the Build Alternatives. A copy of the evaluation is included as Appendix H of this EIS. Consultation with the officials with jurisdiction over the Section 4(f) resources is currently in process. Results of this consultation will be incorporated in the Final Section 4(f) Evaluation. The Final Section 4(f) Evaluation will also provide more specific details regarding impacts and mitigation measures associated with the preferred alternative. The FHWA's final determination regarding use of Section 4(f) lands will be included as a part of the Final Section 4(f) Evaluation and Record of Decision.

**Floodplains and Floodway Impacts** - Construction of either of the Build Alternatives would require the placement of fill materials and structures within the 100-year floodplain associated with Deer Creek and River des Peres. A hydraulic analysis will be completed as a part of the roadway design process. This analysis will be used to determine the appropriate elevation of the roadway and to quantify the impact of the bridge and culvert design on the flood elevation and flood storage volume available within the 100-year floodplain. Depending on the actual alignment and design of the South County Connector, hydraulic analyses conducted during final design would determine if additional flood storage is required to achieve a “no rise” certificate. Through coordination with the local municipalities and Federal Emergency Management Agency (FEMA), a floodplain development permit and a Conditional Letter of Map Revision (CLOMR) would be completed during the design phase to authorize these unavoidable floodplain impacts. Mitigation, in the form of compensatory storage such as creating additional low-lying terraced areas within the floodplain, would be incorporated into the project, if required as a condition of the floodplain development permit and the CLOMR.

**Hazardous Materials** - The South County Connector is located in an area with a long history of industrial and commercial land use. Soil and groundwater contamination may be present throughout the project area. During the design phase and land acquisition process, further analysis, including additional sampling and testing of soils within the proposed footprint of the South County Connector, would be conducted to determine the level of contamination and any required remediation acceptable for use as public right-of-way. This process would allow any contamination encountered to be characterized, removed, treated, and buried or contained by trained professionals following applicable regulations prior to initiating roadway construction. Further coordination with the U.S. Environmental Protection Agency (USEPA) and Missouri Department of Natural Resources (MDNR) will also take place during the design phase to ensure appropriate mitigation measures are included in the final project design.

## MITIGATION AND COMMITMENTS

The County and MoDOT will fulfill federal, state, and local environmental regulatory requirements for all applicable laws, regulations and executive orders through subsequent project design, property acquisition and construction. These include, but are not limited to, the following:

- Clean Water Act
- Clean Air Act Amendments
- Endangered Species Act
- Section 106 of the National Historic Preservation Act
- Section 4(f) of the USDOT Act
- Various Hazardous Waste and Solid Waste Acts
- Uniform Relocation Assistance and Real Property Acquisition Policies Act
- FEMA, SEMA, and Local Floodplain/Floodway Requirements
- Noise Control Act of 1972
- Title VI of the Civil Rights Act of 1964
- Executive Order 12898 (Environmental Justice)

### ***List of Project Commitments***

The following is a summary of the commitments identified in the South County Connector EIS. For further details related to project commitments, refer to subsequent chapters of the EIS. This list may not be all-inclusive and may be updated as part of the Final EIS and Record of Decision.

- 1) The County will continue to work with the public, organizations, businesses, and appropriate agencies to collaborate on possible design enhancements, access issues, bicycle and pedestrian access and connectivity, and address other potential concerns during the design of the South County Connector.
- 2) The County will continue to coordinate with Metro during the design phase to identify options for vehicular parking to compensate for the loss of parking at the Shrewsbury MetroLink Station, as well as identify bus queuing and parking facilities, and to ensure that the project would not preclude a potential future extension of MetroLink to the south.
- 3) The County will continue to coordinate with Metro and East-West Gateway Council of Governments (EWGCOG) to ensure efficient bus access to the Shrewsbury MetroLink Station via Interstate 44 and to facilitate expansion of Bus Rapid Transit services.
- 4) The County will continue to work with each of the communities and participating agencies in the project area regarding changes in access, potential impacts of the South County Connector on future development plans, other roadway projects, existing trails and parks in the project area, and meeting existing local floodplain ordinance requirements.
- 5) The County and MoDOT will develop maintenance-of-traffic plans for the construction phases. Construction schedules, road closures and detours will be coordinated with local officials, police forces and emergency services to reduce impacts to response times of these agencies.

- 6) The County will coordinate with local public service and utility service providers during the final design phase of the project and during the construction.
- 7) The County will conduct the right-of-way acquisition and relocations in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation assistance under this program will be made available to all relocated persons without discrimination. The County will examine ways to further minimize property impacts throughout the corridor, without compromising the safety of the proposed facility, during subsequent design phases.
- 8) During construction, MoDOT's specifications, Missouri Department of Natural Resources (MDNR) Solid Waste Management Program, and MoDOT's Sediment and Erosion Control Program will all be followed. MoDOT will require that all contractors comply with applicable state and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. To minimize impacts associated with construction, pollution control measures outlined in the MoDOT Standard Specifications for Highway Construction will be used. These measures pertain to air, noise and water pollution as well as traffic control and safety measures.
- 9) Since the project will result in the disturbance of more than one acre of total land area, a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from the construction sites is required. Requirements applicable to such a permit will be followed, including the preparation of a Stormwater Pollution Prevention Plan (SWPPP). Best Management Practices (BMPs) to control sediment loss from the site during construction will be included in the SWPPP.
- 10) The County will continue to coordinate with the U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (USEPA), and the Missouri Department of Natural Resources (MDNR) to develop appropriate mitigation strategies that are deemed necessary as compensation for project impacts to wetlands and waters of the U.S. It is anticipated that wetland impacts will be compensated in accordance with USACE Section 404 permit requirements.
- 11) The project construction will incorporate those features necessary to meet National Flood Insurance Program (NFIP) standards, FEMA and SEMA guidelines, and local ordinances pertaining to floodplain and floodway impacts. Mitigation to provide compensatory flood storage will be determined using hydraulic analyses conducted during final design as required to achieve a "no rise" certificate.
- 12) Tree surveys will be conducted prior to the start of construction to identify any trees which could serve as a maternity roost for Indiana bats. Those trees identified will only be removed between November 1 and March 31 to eliminate any potential impact to the Indiana bat during the non-hibernation period. All other tree removal will be conducted as necessary to complete the construction.
- 13) For those resources determined eligible for listing in the NRHP that cannot be avoided or the effects minimized to minor levels, mitigation would need to be identified. The appropriate measures to mitigate the impacts to the historic resource(s) will be determined through consultation among the SHPO, FHWA, and the County. A



Memorandum of Agreement (MOA) that describes the specific mitigation measures to be implemented is required to resolve adverse effects. The Section 106 documentation, including a copy of the Draft MOA, will be coordinated with the Advisory Council on Historic Preservation. The MOA must be executed and included in the FEIS before FHWA can issue a Record of Decision. The final Section 4(f) Evaluation would also need to be completed at this same time.

- 14) The project will attempt to minimize disturbance to properties with known hazardous material concerns. During the design phase and land acquisition process, additional sampling and testing of soils within the proposed footprint of the South County Connector, will be conducted to determine the level of contamination and any required remediation acceptable for use as public right-of-way. Further coordination with the U.S. Environmental Protection Agency (USEPA) and Missouri Department of Natural Resources (MDNR) will also take place during the design phase to ensure appropriate mitigation measures are included in the final project design. Follow-up coordination with the USEPA will also be conducted to address potential impacts associated with the Superfund<sup>3</sup> site located on the Laclede Gas Property.

### **Future Coordination**

Following the Final EIS and Record of Decision approval, ongoing coordination with the public, stakeholders, organizations and resource agencies would continue to develop and fulfill appropriate mitigation measures and commitments. Coordination with the utility companies, railroads, and potentially affected businesses in the project area would also continue into the future during project design and construction. Additional decision-making related to future coordination would be made when more detailed design information becomes available.

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<sup>3</sup> **Superfund** is the common name for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), a United States federal law designed to clean up sites contaminated with hazardous substances.

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#### Appendix B: Public & Agency Coordination

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#### Appendix C: Alternatives and Traffic Analysis

#### Appendix D: Noise

#### Appendix E: Wetland Delineation

- Wetland and Waters of the US Delineation Report
- United States Army Corps of Engineers Jurisdictional Determination Letter
- United States Army Corps of Engineers - St. Louis District Approved Mitigation Banks

#### Appendix F: Cultural Resources

#### Appendix G: Hazardous Materials

#### Appendix H: Section 4(f) Evaluation

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# Chapter 1

## Introduction and Project History

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### 1.0 INTRODUCTION

St. Louis County, Missouri (County), in cooperation with the Federal Highway Administration (FHWA) and the Missouri Department of Transportation (MoDOT), has completed this Environmental Impact Statement (EIS) for a proposed transportation improvement project referred to as the South County Connector.

This chapter of the EIS will:

- Present the background and history of the South County Connector and related transportation studies in the project area.
- Identify the project study area.
- Explain the regulatory framework as it pertains to this EIS.

### 1.1 PROJECT BACKGROUND

A plan for an improved connection from south St. Louis County to central St. Louis County has existed since the late 1950s. The original concept was for a freeway “inner belt expressway” to provide better north-south access through the St. Louis suburbs. This freeway concept resulted in the creation of Interstate 170 north of Interstate 64/U.S. Route 40. Originally, Interstate 170 was proposed to continue south into the southern part of St. Louis County to provide improved access between Interstates 44, 55, and 64. After much deliberation, area leaders decided in the 1990s not to pursue a southward extension of Interstate 170 due to significant disruption of neighborhoods. Although this option was abandoned, the County, MoDOT, and other local agencies continued planning efforts to identify potential options for north-south access improvements in south and central St. Louis County. Over the past several years, the following studies were conducted within the project area:

- **Cross-County Corridor Major Transportation Investment Analysis** – A Major Transportation Investment Analysis (MTIA) was prepared for MoDOT and the East-West Gateway Coordinating Council,<sup>4</sup> the Metropolitan Planning Organization (MPO) for the St. Louis region. Completed in 1998, the MTIA studied transportation options for improving north-south access through the center of St. Louis County. This study resulted in a range of proposed highway and transit improvements in central St. Louis County and the city of St. Louis. The conclusion from the MTIA was that existing arterial roadways - including Brentwood Boulevard, Big Bend Boulevard and Hanley Road/Laclede Station Road - must continue to serve as the de-facto Interstate 170 south of Interstate 64/U.S. Route 40, providing regional north-south mobility for a large portion of central St. Louis County. Another recommendation of the MTIA was expansion of the MetroLink system. The MetroLink extension to Clayton and southward to Shrewsbury in St. Louis County has since been completed, reducing some of the highway congestion in the crowded central corridor.

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<sup>4</sup> The East-West Gateway Coordinating Council is now referred to as the East-West Gateway Council of Governments (EWGCOG).

- **St. Louis County Arterial Study (South Study Area)** – This study was conducted in the early 2000s for the St. Louis County Department of Highways and Traffic to identify short- and long-term recommendations for improving access. This study encompassed a large study area of about 33 square miles that included, in whole or part, a total of 21 communities. The first report of the study, Existing and Future Conditions, identified trends in the study area including land use, demographics, traffic, and environmental considerations. A Needs Analysis was then prepared using the results of that report to determine the arterial system needs for the study area with regard to system capacity, signal coordination, and access management. The final report, Capital Improvement Plan, was completed in 2005. This report identified alternative mitigation strategies, including intersection and arterial signalization and synchronization, minor and major geometric and capacity improvements, and alternative routing and roadway realignments to improve access.
- **Shrewsbury Planning Study** – This is a feasibility study completed for MoDOT in 2004 that examined alternatives to improve access to Interstate 44 in the vicinity of Shrewsbury Avenue. The purpose of the proposed improvements, as identified in this study, were to provide better access to the interstate, to improve connectivity to surrounding communities, to improve local circulation, including access to the Shrewsbury MetroLink Station, and to foster economic development in the area. Several alternatives were identified for potential interchange improvements for Interstate 44 in the vicinity of Shrewsbury Avenue. The East-West Gateway Council of Governments (EWGCOG) has included a proposed Interstate 44 interchange improvement project in the vicinity of Shrewsbury Avenue in the Regional Transportation Plan 2040, the long range transportation plan for the St. Louis region. At this time, the interchange improvement project is unfunded.
- **Hanley Road Corridor Study** - To further address some of the growing needs in this region, the County and MoDOT also completed the Hanley Road Corridor Study in 2004. This study was conducted to identify improvements along Hanley Road from Interstate 64 to Laclede Station Road, to meet the growing needs of a large portion of central St. Louis County. This study was separated into three sections: Clayton-Hanley Corridor Study, Hanley Road Phase 1 North, and Hanley Road Phase 1 South. The Hanley Road Phase 1 South section is located approximately where the South County Connector would connect on the north. Phase I of the planned improvements – a reconfigured intersection between Hanley Road and Manchester Road and widening from four to six travel lanes from Flora Avenue to approximately Litzsinger Road - has been designed, but project construction has been delayed.
- **Metro South Study** – This study, conducted by the EWGCOG, Metro, and MoDOT, in cooperation with the Federal Transit Administration (FTA), included the Metro South MetroLink Extension Alternatives Analysis and Draft Environmental Impact Statement. This project was a continuation of the Cross-County Corridor MetroLink extension project that extended MetroLink light rail service from Forest Park, through Clayton to a terminal station in Shrewsbury at Lansdowne Avenue. The Cross-County planning process identified the Metro South corridor as a potential further extension of MetroLink that would serve the established neighborhoods and potential redevelopment areas of southern St. Louis County. The Draft EIS was completed in 2005. This study analyzed five build alternatives for extension of light-rail into South County. A preferred alternative was not identified in the Draft EIS; however, a Metro

South corridor has been included as a major transit service corridor in the Transportation Plan for the St. Louis region.

- **Moving Transit Forward** – In 2010, Metro completed a 30-year, long-range comprehensive plan to improve transit in the St. Louis Region. Some of the transit options considered in the plan included expanded light rail (MetroLink), Bus Rapid Transit (BRT), conventional bus (MetroBus) service, and commuter rail. Passenger amenities, such as transit centers, were also considered as part of the study. Recommendations from the study within the vicinity of the proposed South County Connector include an extension of the MetroLink (MetroSouth) corridor that would run from the existing Shrewsbury MetroLink Station southeast along River Des Peres to Interstate 55, then southward past Interstate 255/270 to terminate near Butler Hill Road. This corridor would extend MetroLink to South County residents and facilitate commutes to employment centers in Clayton. The study also recommended a BRT route along Interstate 44, a potential commuter rail line along the Interstate 44 corridor, and a proposed transit center at the Shrewsbury MetroLink Station.

The recommendations from these previous studies are taken into consideration as a part of this EIS.

## 1.2 PROJECT STUDY AREA

The previous studies identified in Section 1.1 focused on roadway and transit improvements from a regional perspective, as well as localized projects to improve access in the County. These studies encompassed a wide range of study areas that varied based on the specific goals of the sponsoring agencies. The one commonality among the studies, however, was the need to address north-south access improvements in the County. Based on the recommendations from the previous studies, the County identified the South County Connector as a high priority project that should be carried forward to the next stage of analysis: the development of an EIS.

The initial study area for the South County Connector project encompasses approximately 670 acres within the municipalities of Shrewsbury, Webster Groves, Maplewood, and the city of St. Louis. The study area is generally bounded by Manchester Road to the north; Hanley Road, Laclede Station Road, and Big Bend Boulevard to the west; Weil Avenue and Watson Road to the south; and River Des Peres on the east. The project study area is depicted on Exhibit 1-1: Project Location Map, Exhibit 1-2: Area of Influence, and Exhibit 1-3: Core Study Area in Appendix A.

### 1.2.1 Logical Termini and Independent Utility

Logical termini are defined as (1) rational end points for a transportation improvement, and (2) rational end points for the review of the environmental impacts. Most common termini are points of major traffic generation, especially intersecting roadways. This is due to the fact that in most cases traffic generators determine the size and type of facility being proposed.

A project must also have independent utility; that is, a project must be able to function on its own, without further construction of an adjoining segment. The proposed action has independent utility in that it will meet all aspects of the identified Purpose and Need without the construction of any additional improvements to either the north or south of the study area. Even if a project may need to be constructed in shorter sections or "stages" based on the availability

of funding, the entire length of the proposed improvements should be evaluated as one project, rather than selecting termini based on what is programmed as short range improvements.

The logical termini for this project are as follows:

- The northern terminus is on Hanley Road near Flora Avenue, where the Hanley Road Corridor improvement projects end.
- The southern terminus could be at River Des Peres Boulevard near the Shrewsbury MetroLink Station, at the River Des Peres Boulevard and Watson Road Interchange, or at the Watson Road and Mackenzie Road Intersection. The southern terminus will be further refined based upon traffic demand modeling being conducted as a part of this EIS process.

The termini for this project are logical and have independent utility in that they accomplish the following:

1. Connect to existing arterial streets that provide access to Interstate 64, Interstate 170, and central St. Louis County to the north and Interstate 55 to the south;
2. Create a project that is of sufficient length to address environmental matters on a broad scope – in particular the floodplain, Section 4(f) parklands, and social issues;
3. Would be usable even if no other improvements are made; and
4. Do not restrict consideration of alternatives for other reasonable foreseeable transportation improvements, such as MetroLink expansion.

### **1.3 REGULATORY FRAMEWORK**

The National Environmental Policy Act of 1969, commonly known as NEPA, created a requirement that an EIS be prepared for all major federal actions significantly affecting the quality of the human environment. As the lead federal agency, the FHWA is responsible for ensuring that all highway improvement projects using federal money comply with NEPA. This EIS is a key part of the multiple stages required to plan, develop, and construct major highway projects that will likely use federal funding. St. Louis County is a joint lead agency, along with MoDOT. St. Louis County is the project sponsor.

Developing an EIS is an objective process that helps determine what actions, if any, would best serve area transportation needs. This EIS looks at the effects associated with various alternatives such as constructing a new roadway, making improvements to the existing roadway network, or doing nothing. The County, MoDOT and the FHWA encourage the public to voice their opinions about the problems and solutions identified during the EIS process. Selection of an alternative will not be final until the FHWA issues a Record of Decision.

The time needed to complete the EIS analyses, to decide upon a course of action, and to prepare for implementation can be lengthy. There is currently no funding available to implement a preferred build alternative for the South County Connector. Once the EIS process has been completed and a Record of Decision has been issued by the FHWA, construction of the project could begin once federal funding is secured.



### **1.3.1 Project Scoping**

Project scoping is one of the first steps in the EIS process. In December 2010, agency and public scoping meetings were conducted to obtain input about the issues and factors to be considered in this EIS. The scoping process also assists in identifying needs and goals of the study and the range of alternatives to be evaluated. A copy of the Scoping Summary Report is included in Appendix B, Public and Agency Coordination.

### **1.3.2 Cooperating and Participating Agencies**

As the lead federal agency for this EIS, FHWA's NEPA regulations (23 CFR 771.111(d)) require that federal agencies with jurisdiction by law (such as permitting or land transfer authority) be invited to be cooperating agencies for an EIS. Based on the project's proximity to waters of the United States and the potential need for a Clean Water Act (CWA) permit, the U.S. Army Corps of Engineers (USACE) has agreed to serve as a cooperating agency in the EIS process.

Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) created a new category of agencies that are invited to participate in the environmental review process for EIS documents. These are federal and non-federal governmental agencies that may have an interest in the project because of their jurisdictional authority, special expertise, and/or statewide interest. There are 14 federal, state, and local agencies that are serving as participating agencies for this project. Further information regarding cooperating and participating agencies, including the list of agencies and their roles and responsibilities in the EIS process, is included in the Coordination Plan for Agency and Public Involvement. A copy of the Coordination Plan is included in Appendix B, Public and Agency Coordination.

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## Chapter 2

# Purpose and Need

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## 2.0 INTRODUCTION

Purpose and Need refers to the transportation related problems of a system that a project is intended to address. It identifies the need for improvements and justification for why a project is needed. The purpose and need of a project is essential in establishing a basis for the development of the range of reasonable alternatives required in an EIS and assists with the identification and eventual selection of a preferred alternative.

## 2.1 PURPOSE AND NEED

The purpose of the proposed action is to improve roadway connectivity, reduce congestion, and provide additional capacity to accommodate the existing and anticipated traffic levels on the roadway network. Safety is also expected to improve by providing a more efficient transportation system. Specifically, the proposed transportation improvements will provide the following:

- Improve **roadway connectivity** between south St. Louis County, south St. Louis City, and central St. Louis County, improve access to Interstate 44, and facilitate improved access to Interstates 55, 64, and 170;
- Reduce **congestion** on the roadway network (such as Shrewsbury Avenue, Lansdowne Avenue and Murdoch Avenue) and improve traffic conditions for the adjacent residential neighborhoods;
- Provide transportation system **capacity** to respond to current and reasonably foreseeable travel demand in the region; and
- Improve **safety** throughout the roadway network through a more efficient transportation system.

This chapter presents the project needs and the other goals and objectives in more detail. The needs outlined in this section describe the problems that the proposed action is intended to address and, to the extent possible, explains the underlying causes of those problems.

### 2.1.1 Roadway Connectivity

#### 2.1.1.1 Existing Roadway Network

Streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the role that any particular road or street should play in serving the flow of trips through a highway network.

The project study area falls under the classification of an “urban area,” as designated by the Bureau of the Census as having a population of 5000 or more. The urban roadway system

includes the following type of roadways, or functional classifications, as established by the American Association of State Highway and Transportation Officials (AASHTO).<sup>5</sup>

- **Urban Principal Arterial** – partially or fully-controlled access; serves major centers of activity; highest traffic volume corridors; service to abutting land is subordinate to travel service of the major traffic movements; spacing between Urban Principal Arterials can range from 1 to 5 miles.
- **Urban Minor Arterial Street** – connect to Urban Principal Arterials; places more emphasis on land access and offers lower traffic mobility; contains connections to urban collector streets; spacing between Urban Minor Arterials typically not more than 1 to 2 miles.
- **Urban Collector Street** – provides both land access service and traffic circulation within residential neighborhoods and commercial and industrial areas; distributes traffic between the arterial systems to local streets.
- **Urban Local Street** – provides direct access to abutting lands; offers lowest level of mobility; service to through-traffic movement usually discouraged.

Table 2-1 summarizes the existing roadway facilities in the project study area.

**Table 2-1: Existing Roadway Facilities**

Roadways in Study Area	Existing Roadway Characteristics		
	Functional Classification	Number of Lanes	Speed Limit (mph)
Interstate 44	Interstate	8	60
Hanley Road	Urban Principal Arterial	4-5	35
Laclede Station Road	Urban Principal Arterial	4-5	35
Shrewsbury Avenue	Urban Minor Arterial	2-5	30
River Des Peres Boulevard	Urban Minor Arterial	4	40
Big Bend Boulevard	Urban Minor Arterial	4-5	35
Watson Road	Urban Minor Arterial	4	40
Mackenzie Road	Urban Minor Arterial	4	40
Murdoch Avenue	Urban Minor Arterial	2-4	30
Murdoch Cut-Off	Urban Minor Arterial	2-3	30
Landsdowne Avenue	Urban Collector	2-5	30
Marshall Avenue	Urban Collector	2	25
Key West Avenue	Urban Collector	2	25
Weil Avenue	Urban Collector	2	25
Wilshusen Avenue	Urban Local Street	2	25
Other Local Streets	Urban Local Street	2	25

Source: East-West Gateway Council of Governments, CMT Analysis

Currently, a significant portion of traffic in the study area is through-traffic, traveling north or south between south St. Louis County, south St. Louis City, and central St. Louis County, including commuters that utilize the Shrewsbury MetroLink Station. There are several north-

<sup>5</sup> AASHTO, Geometric Design of Highways and Streets, 2004.



south routes (e.g. River Des Peres Boulevard, Mackenzie Road, Laclede Station Road, Hanley Road, and Big Bend Boulevard) that the traveling public currently uses to reach their destinations. However, none of these routes provides an efficient and direct connection to arterial roadways north and south of Interstate 44. Further, there is no direct access provided to the Shrewsbury MetroLink Station from the north. As a result, the adjacent local residential streets become the route of choice for motorists trying to maneuver through the area to reach the different north-south arterial roadways or the MetroLink Station.

One of the primary purposes of the proposed South County Connector is to provide a transportation facility that separates regional traffic from local traffic. The need for separating regional traffic from local traffic is driven by the existing congestion along the local and collector streets. Streets such as Marshall Avenue, Lansdowne Avenue, Murdoch Avenue, and Weil Avenue provide east-west access to adjacent north-south arterial roadways and to the Shrewsbury MetroLink Station. These local and collector streets in the project study area are two-lane roadways. The problem is these roadways do not provide the capacity to efficiently accommodate the traffic during certain peak travel times. There are also numerous residential driveways directly accessing these streets.

It is not uncommon to see vehicles parked on the sidewalks along Lansdowne Avenue. This may be due to line-of-sight issues, and possibly to avoid having to back up into congested traffic. On-street parking is not possible since Lansdowne Avenue is only wide enough to accommodate one lane of traffic in each direction. These are safety concerns for not only residents, but also for pedestrians and bicyclists along this residential street. This example illustrates the need for the proposed action relative to not only connectivity, but also to congestion, to capacity, and to safety. Further information on congestion and capacity is presented in Section 2.1.2, and information related to safety is included in Section 2.1.3.

#### **2.1.1.2 Interstate Accessibility and Connectivity**

Interstate 44 bisects the project study area with two half interchanges that provide partial access at Shrewsbury Avenue and Murdoch Avenue. The current interchange configurations provide traffic movements to and from the east being served at Shrewsbury Avenue, and to and from the west served at Murdoch Avenue. These access points are about one-half mile apart and require travel along the residential streets to maneuver between these two interchange access points.

In addition, there is currently nearly five miles between interchanges that provide full access to Interstate 44 near the study area: Elm Avenue Interchange, located about 1.6 miles west of the Murdoch Avenue Interchange, and Hampton Avenue Interchange, located about 2.8 miles east of the Shrewsbury Avenue Interchange.

To address the purpose of improving connectivity between south St. Louis County, south St. Louis City, and central St. Louis County, there is a need to provide better access to Interstate 44 within the study area. Improved interstate access should also take into consideration, to the extent practical, better access to the Shrewsbury MetroLink Station, which would alleviate some of the congestion along the residential streets. Further information regarding traffic congestion is presented in Section 2.1.2.

Improving connectivity within the project study area to existing north-south arterial roadways will also facilitate improved connections to other major highways in the region, including Interstate 55 to the south, and Interstates 64 and 170 to the north.

## 2.1.2 Roadway Congestion and Capacity

The following sections describe the need to reduce congestion on the roadway network and provide transportation system capacity to respond to current and reasonably foreseeable travel demand in the region.

### 2.1.2.1 Existing and Projected Traffic Volumes

The design year used for this project is 2040. Traffic volumes on the roadways within the project area are expected to increase over time. This additional traffic will result in further roadway congestion and traffic delays. Congestion and delay has been estimated by collecting existing traffic information, forecasting future conditions and estimating traffic operations using the methodology and tools described below

Existing traffic volumes on the principal arterials and collectors were gathered from existing sources or recounted if recent information was not available. The existing traffic volumes are quantified by the average annual daily traffic (AADT) volumes and the peak hourly volumes during the morning and evening peak hours at critical intersections. The AADT volumes consist of the average number of vehicles traveling in both directions on a given roadway on an average day throughout the year. A summary of the existing traffic volumes along key roadway segments within the study area is shown in Table 2-2.

**Table 2-2: Existing Annual Average Daily Traffic**

Location		AADT (Year)
Hanley Road	South of Manchester Road	33,770 (2005)
	South of Big Bend Boulevard	31,760 (2006)
Laclede Station Road	South of Marshall Road	28,880 (2006)
	North of Murdoch Avenue	25,510 (2006)
	South of Murdoch Avenue	27,540 (2006)
Shrewsbury Avenue	North of Murdoch Avenue	10,560 (2005)
River Des Peres Boulevard	South of Lansdowne Avenue	20,430 (2011)
Big Bend Boulevard	Northeast of Laclede Station Road	18,210 (2006)
	Southwest of Laclede Station Road	12,870 (2006)
	South of Manchester Road	25,570 (2006)
	West of Murdoch Avenue	14,190 (2006)
	NE of Shrewsbury Avenue	24,800 (2006)
	Southwest of Shrewsbury Avenue	18,210 (2006)
Watson Road	East of Mackenzie Road	29,983 (2010)
Mackenzie Road	North of Gravois Road	15,413 (2010)
	South of Gravois Road	19,370 (2006)
Murdoch Avenue	East of Laclede Station Road	11,380 (2006)
	Northwest of Laclede Station Road	18,750 (2006)
Murdoch Cut-Off	West of Lansdowne Avenue	7,250 (2006)
Lansdowne Avenue	West of St. Louis City Limits	15,470 (2006)
Interstate 44	East of St. Louis City Limits	138,031 (2010)

Sources: Summary of Automatic Traffic Volume Counts, St. Louis County Department of Highways and Traffic, Revised 12/31/2007.  
Missouri Department of Transportation, District 6 Traffic Volume and Commercial Vehicle Count Map, 2010.

In addition to AADT volumes, morning and evening peak hour volumes were determined for the major intersections within the study area. These peak hour traffic volumes were used to create a model of the existing and estimated future traffic conditions. Appendix C, Alternatives and Traffic Analysis, contains further details on the traffic modeling.

Future traffic volumes on the principal arterials and collectors are based upon projections made by a previous study prepared for the County: St. Louis County Arterial Study – Existing and Future Conditions.<sup>6</sup> This study used census data, existing and projected land uses and existing and projected employment data to generate growth rates throughout the St. Louis County area. Growth rates for roadways in the current study area were averaged to determine a project-wide growth rate of 0.5% per year. This rate was applied to the South County Connector study area network to generate 2020 and 2040 traffic volumes.

This method applies only to the No Build scenario. Any build scenario that changes how traffic flows through the study area will cause uneven growth rates on area roads. Therefore, further analysis, to be included as a part of the alternatives evaluation, is required to compute growth rates for the build scenarios.

#### **2.1.2.2 Level of Service and Delay**




Traffic engineers use a measure called level of service (LOS) to describe roadway congestion. LOS is a relative measure of traffic density and traffic flow along a given section of roadway. It is a way to describe what a driver would encounter while traveling through an intersection or open section of roadway during peak-hour traffic. The greater the traffic volume per lane a roadway must carry, the worse the LOS will be.

Level of service categorizes the quality of traffic operation on a roadway with a six-level, A to F rating system. LOS A is defined as the best traffic operation, with no congestion; F is defined as the poorest traffic operation, with extreme congestion. Table 2-3 illustrates and briefly describes the roadway LOS criteria.

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<sup>6</sup> St. Louis County Arterial Study – Existing and Future Conditions, Parsons Brinckerhoff Quade & Douglas, Inc., April 30, 2003.

**Table 2-3: Roadway Level of Service Criteria**

<b>Level of Service (LOS)</b>	<b>Illustration</b>	<b>Description</b>
A		Free flow. Low volumes and no delay.
B		Stable flow. Speed restricted by travel conditions. Minor delays.
C		Stable flow. Speeds and maneuverability closely controlled due to higher volumes.
D		Stable flow. Speeds affected by change in operating conditions. High-density traffic restricts maneuverability.
E		Unstable flow. Low speeds, considerable delay, volumes at or near capacity.
F		Forced flow. Very low speeds, volumes exceed capacity, long delays with stop-and-go traffic.

Sources: Transportation Research Board, Highway Capacity Manual 2010, Chapters 18 & 19, 2010.  
 Graphic illustrations: Florida DOT Quality of Service Handbook, page 15, 2009.

Poor LOS can result from conditions such as higher traffic volumes than the number of traffic lanes can accommodate, inadequate intersection or interchange capacity or design, and lack of signals or poorly timed signals. Poor geometrics that cause vehicles to slow below posted speed limits and the presence of disruptive traffic movements, such as those caused by intersections or a lack of turning lanes in areas with numerous entrances, are other factors that may contribute to poor LOS.

The streets within the study area were analyzed using the existing and projected traffic volumes in each direction. The LOS of an urban street is determined by the percentage of free flow travel speed that is achievable. Levels of Service were calculated using Synchro 7, a macroscopic traffic analysis software application. Table 2-4 provides the estimated LOS for the major streets in the study area without any improvements to the existing roadway network.



**Table 2-4: Peak Hour Roadway Level of Service**

Roadway	Direction	2011		2020		2040	
		AM	PM	AM	PM	AM	PM
Laclede Station Road	Northbound	F	C	E	C	F	C
	Southbound	D	F	C	F	C	F
Big Bend Boulevard	Northbound	D	E	E	E	E	D
	Southbound	E	F	D	F	D	F
Murdoch Avenue	Eastbound	D	E	D	E	D	E
	Westbound	D	D	D	D	D	D
Shrewsbury Avenue/Key West Avenue	Northbound	E	E	D	E	D	E
	Southbound	D	D	C	D	C	D
Lansdowne Avenue	Eastbound	E	F	E	F	E	F
	Westbound	E	C	E	C	E	C

Note: LOS E is the threshold of acceptability during Peak Hour (MoDOT Engineering Policy Guide, Section 232).

Source: CMT Analysis, 2013.

On streets with traffic signals and unsignalized control (i.e. stop signs), the roadway user is concerned with avoiding lengthy stops or repeated stops at a series of intersections. Average stopped-time delay is the principal measure of effectiveness used in evaluating signalized and unsignalized intersections. The criteria used to define intersection LOS are shown in Table 2-5. The delays shown assume no improvements to the existing roadway network. Also, the delays shown are based on optimized signal timing plans. This may cause the reported delays to be less than what is experienced in the field.

**Table 2-5: Intersection Level of Service Criteria**

Level of Service (LOS)	Signalized Intersection Control Delay (sec)	Unsignalized Intersection Control Delay (sec)
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	<15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Source: Transportation Research Board, Highway Capacity Manual 2010, Chapters 18 & 19, 2010.

Delay time is closely related to motorists' perceptions of quality of traffic flow. The LOS for each leg of an intersection is also an indicator of the efficiency of traffic operations. Table 2-6 provides LOS for signalized and unsignalized intersections in the study area based on the average delay per vehicle, in seconds.

**Table 2-6: Peak Hour Intersection Level of Service**

Signalized	Peak Hour LOS (Seconds of Delay)					
	2011		2020		2040	
	AM	PM	AM	PM	AM	PM
Laclede Station & Marshall	D (47.7)	D (41.8)	D (41.4)	D (53.5)	E (73.6)	F (82.8)
Laclede Station & Big Bend	F (80.6)	F (180.6)	E (70.6)	F (90.7)	F (112.3)	F (134.8)
Laclede Station & I-44/Wilshusen	E (67.3)	E (70.3)	D (51.0)	D (44.9)	F (80.9)	F (100.5)
Laclede Station & Murdoch	C (25.1)	F (96.2)	B (17.9)	F (81.7)	C (21.4)	F (126.2)
Murdoch & I-44 On-Ramp	A (01.0)	D (38.1)	A (03.5)	D (53.1)	A (04.3)	F (100.4)
Murdoch & Wilshusen	B (15.5)	C (26.8)	B (12.8)	B (17.7)	B (12.2)	C (22.4)
Shrewsbury & Big Bend	C (25.5)	F (81.4)	C (26.4)	E (77.6)	C (32.8)	F (156.9)
Shrewsbury & I-44 WB Off Ramp	B (14.2)	D (53.7)	B (12.8)	D (52.9)	B (14.2)	F (82.8)
Shrewsbury & Lansdowne	C (26.5)	B (16.2)	C (22.1)	B (11.2)	C (23.6)	B (13.5)
Shrewsbury & Murdoch	C (34.1)	C (26.7)	C (21.9)	C (20.6)	C (22.6)	C (22.0)
Landsdowne & Murdoch Cut-Off	A (10.0)	E (59.5)	A (05.8)	F (83.5)	A (05.9)	F (129.5)
Landsdowne & River Des Peres Blvd.	C (26.9)	D (38.0)	C (29.3)	D (39.2)	D (36.0)	E (58.4)

Unsignalized	Movement										
I-44 EB On-Ramp & Shrewsbury	SBL	C (17.7)	B (10.6)	C (20.0)	B (10.9)	D (28.5)	B (11.7)				
Lansdowne & St. Vincent	SB	C (16.8)	D (29.0)	C (17.8)	D (32.4)	C (20.7)	E (42.8)				
River Des Peres Blvd & WB Watson	EB	E (40.9)	F (99.9)	F (50.5)	F (99.9)	F (72.6)	F (99.9)				
River Des Peres Blvd & EB Watson	WB	E (40.6)	B (10.2)	F (73.1)	B (10.8)	F (99.9)	B (10.5)				
Watson & Weil	SB	B (10.5)	C (22.3)	B (10.6)	D (25.1)	B (10.8)	D (31.4)				

Note: LOS E is the threshold of acceptability during Peak Hour (MoDOT Engineering Policy Guide, Section 232).

Source: CMT Analysis, 2013

The peak hour traffic analysis reveals existing LOS at several intersections between D and F. By the design year 2040, the LOS is expected to degrade to LOS E or F for most intersections in the study area. Exhibit 2-1 shows the existing LOS for the intersections within the study area and also identifies which intersections have one or more movements that are over capacity. The 2040 Design Year results are shown in Exhibit 2-2.

AASHTO's Green Book recommends a design LOS of C for urban freeways and arterials and LOS D for collectors and local streets.<sup>7</sup> It goes on to state that "highway agencies should strive to provide the highest level of service practical. For example, in heavily developed sections of metropolitan areas, conditions may make the use of level-of-service D appropriate for freeways and arterials; however, this level of service should be used sparingly and at least level-of-service C should be sought."

The Missouri Department of Transportation (MoDOT) considers a LOS of E during the peak hour and a LOS D during off-peak hours acceptable for urban roadways in the design year.<sup>8</sup> Given these criteria, several study intersections will operate at an unacceptable peak hour LOS by 2020, with many more failing by 2040. While one of the goals of the project would be to strive to meet the AASHTO criteria for LOS, at a minimum MoDOT criteria will be utilized.

<sup>7</sup> AASHTO, Geometric Design of Highways and Streets, 2004, Exhibit 2-32.

<sup>8</sup> Missouri Department of Transportation, Engineering Policy Guide, Section 232.

## 2.1.3 Safety

### 2.1.3.1 Accident Data

A survey of historical accident data in the study area shows that accidents have fluctuated in frequency since 2007. The shut-down and rebuilding of Interstate 64 (2008-2009) near the study area had an impact on how traffic flows through the study area, creating an anomaly in the accident data. Interstate 64 west of the study area was closed during 2008, diverting more traffic from west St. Louis County through the study area and likely caused an increase in accident frequency in that year. Interstate 64 was closed from Interstate 170 to Kingshighway Boulevard for the entirety of 2009. This appears to have caused less diversion of trips to and from the west through the study area, and accordingly the crash frequency decreased during 2009.

The opening of the rebuilt Interstate 64 diverted trips away from the study area by making Interstate 64 more attractive as a route to central St. Louis County than Interstate 44. This reduction in traffic has resulted in a reduction in accidents in the study area since the reopening of Interstate 64 at the end of 2009. As traffic patterns adjust and traffic volumes increase, it is likely that accident rates will increase. Table 2-7 summarizes the accident data on roadways in the study area for 2007-2010. The lone fatality in the study area involved a pedestrian and occurred at the intersection of Hanley Road at Laclede Station Road.

**Table 2-7: Accident Data on Roadways in the Study Area**

Type of Injury/Damage	2007	2008	2009	2010	Total
Fatality	1	0	0	0	1
Personal Injury	75	54	72	42	236
Property Damage Only	257	286	218	204	933
<b>Total</b>	<b>333</b>	<b>340</b>	<b>290</b>	<b>246</b>	<b>1,170</b>
<b>Change since 2007</b>		<b>2.10%</b>	<b>-6.70%</b>	<b>-9.60%</b>	

Source: St. Louis County Department of Highways and Traffic

Breaking down accidents by key roadway corridors in the study area yields similar results, with a reduction in accidents as shown in Table 2-8. Murdoch Avenue and Big Bend Boulevard have the highest percentage of accidents in the study area.

**Table 2-8: Accident Data by Corridor**

Corridor	2007	2008	2009	2010	Total	Injuries	
						Number	% of Accidents
Hanley Road/Laclede Station Road	171	177	136	97	581	130	22%
Big Bend Boulevard	141	139	144	112	536	166	31%
Murdoch Avenue	19	20	20	13	72	18	25%
Shrewsbury Avenue	26	31	26	23	106	20	19%
Lansdowne Avenue	6	18	12	15	51	0	0%
Marshall Avenue	5	7	9	4	25	0	0%

Source: St. Louis County Department of Highways and Traffic

The group of intersections that comprise the Interstate 44/Murdoch Avenue/Laclede Station Road interchange has among the highest occurrences of accidents in the study area. Also, the intersection of Laclede Station and Big Bend Boulevard has a high number of accidents. These intersections have high traffic volumes along with skewed approaches and lane restrictions that can confuse drivers. These conditions likely contribute to the high number of accidents at these locations. Table 2-9 identifies the high accident intersections in the study area.

**Table 2-9: High Accident Intersections**

<b>North-South Street</b>	<b>East-West Street</b>	<b>Number of Accidents 2007-2010</b>
Laclede Station Road	Murdoch Avenue	175
Laclede Station Road	Big Bend Boulevard	147
Hanley Road	Manchester Road	95
Big Bend Boulevard	Manchester Road	93
Laclede Station Road	Interstate 44	89
Murdoch Avenue	Interstate 44	74
Mackenzie Road	Watson Road	65
Big Bend Boulevard	Murdoch Avenue	46
Murdoch Cut-Off	Lansdowne Avenue	35
Shrewsbury Avenue	Murdoch Avenue	27
Big Bend Boulevard	Shrewsbury Avenue	26
Wilshusen Avenue	Murdoch Avenue	25

Source: St. Louis County Department of Highways and Traffic

Some intersections have a low accident frequency, but a high proportion of fatality-injury accidents. These intersections may have inadequate sight distance or other geometric deficiencies that lead to more violent accidents. The intersections with the highest number of injury accidents are located on Marshall Avenue and Tuxedo Boulevard. These roads are used as a cut-through between Big Bend Boulevard and Laclede Station Road. Neither road is designed for high-speed through traffic, which can lead to more fatality-injury accidents due to insufficient geometric design.

Additionally, a large number of these intersections are located along Laclede Station Road, where traffic volumes are some of the highest in the study area. Intersections that have experienced 150% higher fatality-injury accident rate than the study area rate of 20% are identified in Table 2-10. This table shows a total of 13 intersections in the study area that had a 30% or greater accident rate of fatalities-injuries.



**Table 2-10: High Fatality-Injury Accident Intersections (2007-2010)**

		Total	Injuries	
North-South Street	East-West Street	Accidents	Number	% of Accidents
Study Area		1,209	240	20%
Big Bend Boulevard	Shrewsbury Avenue	26	9	35%
Laclede Station Road	Marshall Avenue	16	9	56%
Laclede Station Road	Tuxedo Boulevard	11	6	55%
Hanley Road	Laclede Station Road	14	4	29%
Shrewsbury Avenue	Carr Lane	10	4	40%
Laclede Station Road	Sutherland Avenue	8	3	38%
Big Bend Boulevard	Big Bend Industrial Court	5	2	40%
Hanley Road	Flora Avenue	6	2	33%
Big Bend Boulevard	Sunnen Drive	2	2	100%
Laclede Station Road	Edgebrook Lane	3	1	33%
Laclede Station Road	Greeley Avenue	3	1	33%
St. Vincent Avenue	Murdoch Avenue	1	1	100%
Shrewsbury Avenue	Nottingham Avenue	2	1	50%

Source: St. Louis County Department of Highways and Traffic.

While accidents have declined in the study area on both surface streets and Interstate 44, there are hotspots on Interstate 44 that have accident rates well above the statewide average. The mile of eastbound Interstate 44 between and surrounding the Shrewsbury and Laclede Station interchanges has had an accident rate of 142 accidents per 100 million vehicle miles traveled from 2006 to 2010, nearly 1.5 times the statewide average.

Rear-end collisions along Interstate 44 within the study area were also analyzed. This analysis showed that 23% of the rear-end accidents in the study area occurred within the half-mile section preceding the Laclede Station Road/Murdoch Avenue off-ramp. In comparison, the half-mile preceding the Shrewsbury Avenue off-ramp accounted for only 2% of the rear-end accidents in the study area. This is an indication that the backups at the Laclede Station Road/Murdoch Avenue intersection and off-ramp are causing a high number of accidents on Interstate 44.

Table 2-11 summarizes the Interstate 44 historical accident data for the entire study area between Elm Avenue and Arsenal Avenue. Exhibit 2-3 in Appendix A depicts stretches of Interstate 44 with accident rates higher than the statewide average in the study area.

**Table 2-11: Interstate 44 Accident Data**

<b>Summary</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
Fatal	0	0	0	0	1	1
Disabling Injury	3	1	4	3	1	12
Minor Injury	20	14	16	14	11	75
Property Damage Only	88	42	46	48	41	265
<b>Total</b>	<b>111</b>	<b>57</b>	<b>66</b>	<b>65</b>	<b>54</b>	<b>353</b>
<b>AADT</b>	<b>58,768</b>	<b>59,356</b>	<b>58,988</b>	<b>66,616</b>	<b>65,950</b>	
<b>Accident Rate</b>	<b>140.12</b>	<b>71.24</b>	<b>83.00</b>	<b>72.38</b>	<b>60.74</b>	
<b>Statewide Rate for Interstates</b>	<b>107.82</b>	<b>108.97</b>	<b>105.50</b>	<b>102.54</b>	<b>104.31</b>	

Source: Missouri Department of Transportation

It should be noted that Interstate 44 was restriped to 5 lanes in each direction with narrow shoulders as a part of the Interstate 64 shutdown. This may account for the spike in accidents during 2008 and 2009.

### 2.1.3.2 Geometric and Roadway Deficiencies

The posted speed limit on Interstate 44 is 60 miles per hour, while Interstate 44 is designed for traffic progressing at 55 miles per hour.<sup>9</sup> There are sections of Interstate 44 in the study area that have deficient sight distance or substandard design speeds. According to AASHTO's Green Book,<sup>10</sup> the following horizontal curves on Interstate 44 were calculated to have a design speed of 45 miles per hour:

- Between Murdoch Avenue and Laclede Station Road
- Between Laclede Station Road and Shrewsbury Avenue
- Between BNSF Railroad underpass and River des Peres

Since motorists must adapt to these sections of roadway that encourages deceleration, the likelihood of accidents increases at these locations. While fixing mainline deficiencies is not in the scope of this project, reconfiguring the interchanges or reducing traffic levels at these interchanges could reduce weaving movements and ramp congestion and lead to fewer accidents.

In addition to these mainline deficiencies, several ramps in the study area have insufficient acceleration and deceleration distances. In particular the Shrewsbury Avenue and Laclede Station Road off-ramps have inadequate deceleration distances before the ramps. This can lead motorists to begin decelerating while still on Interstate 44, which can cause rear-end accidents. As previously mentioned, the Laclede Station Road off-ramp had been identified as a hotspot for rear-end accidents. This geometric deficiency, combined with high traffic volumes using the exit ramp may contribute to the high accident frequency.

<sup>9</sup> Interstate 44 Record Drawings, MoDOT

<sup>10</sup> AASHTO, Geometric Design of Highways and Streets, 2004.

## 2.2 OTHER PROJECT GOALS AND OBJECTIVES

In addition to the primary purposes and needs discussed in Section 2.1, other project goals and objectives have been identified for the South County Connector, which are discussed in the following sections.

### 2.2.1 Multi-Modal Considerations

Multi-modal transportation is an element being considered as a part of the South County Connector study, which promotes the joint Livable Communities Initiative of the U.S. Department of Transportation, Housing and Urban Development, U.S. Environmental Protection Agency, and other federal agencies. The following is a discussion of these multi-modal considerations.

#### 2.2.1.1 Accommodate Bicyclists and Pedestrians

Consideration must be given to safely accommodating pedestrians and bicyclists during the development of federally-funded highway projects (23 CFR 652.5). There is also significant local interest in accommodating bicyclists and pedestrians within the study area. Great Rivers Greenway District, a unit of local government per Missouri Statute, and Trailnet, a local advocacy group, both have specific missions related to improving bicycle and pedestrian accessibility and are serving as participating agencies for the South County Connector EIS.

- **Great Rivers Greenway District (GRG)** is a regional greenway and trails agency, funding (among other things) both the planning and development of the regional trails system. GRG led an effort, along with several core partners, to prepare the Gateway Bike Plan for the city of St. Louis, St. Louis County and St. Charles County. "The Plan provides an implementable direction for the region providing a connected on road bicycle system of routes with connections between communities, transit, greenways and trails."<sup>11</sup>
- **Trailnet** is a St. Louis based non-profit organization focused on the promotion of active living. Trailnet has a history of working with local municipalities in developing programs, planning, and policy to promote walking and bicycling throughout the St. Louis bi-state region. Trailnet is also one of the core partners in the development of the Regional Bicycle Master Plan.

There are several existing multi-use trails and on-street facilities that provide access to various activity centers in and around the project study area. The Gateway Bike Plan also identifies potential future bicycle facilities. One of the project goals of the South County Connector is to identify potential opportunities to improve safety, connectivity, and accessibility for both bicyclists and pedestrians. With GRG and Trailnet serving as participating agencies in the EIS process, the County has had the opportunity to coordinate with these agencies to discuss potential connectivity routes in the project area.

#### 2.2.1.2 Accommodate Future Transit Opportunities

The Shrewsbury MetroLink Station, located within the South County Connector study area, is currently the last stop to the south along the Cross-County MetroLink light rail system. As previously discussed, studies have been conducted to identify alternatives to extend the light rail system further south into South County. One of the goals of the South County Connector is to

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<sup>11</sup> Gateway Bike Plan, Great Rivers Greenway, August 2011, <http://www.grgstl.org/projects/gateway-bike-plan-.aspx>.

ensure that the project would not preclude a potential future extension of MetroLink to the south and to enhance access to the existing Shrewsbury MetroLink Station. To meet this goal, coordination with Metro and the East-West Gateway Council of Governments (EWGCOG), that are both serving as participating agencies in this EIS process, will be ongoing throughout the development of the EIS and during the design phase of the project.

### **2.2.2 Land Use and Economic Development Opportunities**

Since the project study area is located in an urban area that is largely developed, the focus of this goal is to identify land use and economic development opportunities through redevelopment of vacant or under-developed properties. Improved connectivity would support improved access to existing commercial and major employment centers, improved access to transit and other activity centers, and promote sustainable development and economic growth.

The municipalities located in the project study area - including Shrewsbury, Webster Groves, Maplewood, and St. Louis City - are all participating agencies in the EIS process. These communities, as well as other key stakeholders in the project area, will serve as important resources for identifying land use and economic development opportunities. This will be an ongoing effort, especially during the development and evaluation of alternatives that are carried forward in the EIS.

### **2.2.3 Consistency with Local and Regional Planning**

A number of local and regional planning studies have been conducted over the past several years by various organizations. These studies, which have addressed topics such as highway improvements, transit, land use and economic development, and bicycle planning, are taken into consideration as a part of the South County Connector study. Several of these studies were presented in Chapter 1 to give the readers information on the background of the South County Connector project. Table 2-12 summarizes the local and regional planning studies or documents that have been completed or are underway that could have some relevancy or effect upon the South County Connector. The goal is to ensure consistency with these planning efforts.

**Table 2-12: Local and Regional Planning Studies**

<b>Title</b>	<b>Lead Sponsor(s)</b>	<b>Year Completed</b>	<b>General Description</b>
Cross-County Corridor Major Transportation Investment Analysis (MTIA)	EWGCOG MoDOT	1998	A study that identified both highway and transit improvements in central St. Louis County and City. Several of the recommendations from the MTIA were carried forward into subsequent analyses, including several of the studies below.
St. Louis County Arterial Study (South Study Area)	County	2001	A study that identified access improvements in south St. Louis County, including intersection and arterial signalization and synchronization, minor and major geometric and capacity improvements, and alternative routing and roadway realignments.
Shrewsbury Planning Study	MoDOT	2004	A feasibility study that examined alternatives to improve access to Interstate 44 to improve connectivity to surrounding communities, improve local circulation including access to the Shrewsbury MetroLink Station, and foster economic development in the area.
Hanley Road Corridor Study	County MoDOT	2004	This study was conducted to identify improvements along Hanley Road from I-64 to Laclede Station Road to meet growing needs of a large portion of central St. Louis County. This study was separated into three sections. The Hanley Road South section is generally where the South County Connector would connect on the north.
Metro South Study - Alternative Analysis and Draft EIS	FTA EWGCOG Metro MoDOT	2005	This study analyzed alternatives for extension of MetroLink light-rail from the Shrewsbury Station into South County. A preferred alternative was not identified in the Draft EIS; however, a Metro South corridor has been included as a major transit service corridor in the Long Range Transportation Plan for the St. Louis region.
St. Louis Regional Bicycling and Walking Transportation Plan	EWGCOG	2005	This document was developed as an outgrowth of the region's transportation plan (Legacy 2030). This document does not specify where facilities should be located, but serves as a "how-to and when-to" resource document for communities developing bicycle and pedestrian facilities.
St. Louis County Strategic Plan Update	County	2008	This is the County's long-range comprehensive plan, which includes information on land use, community facilities, and transportation.
Moving Transit Forward	Metro	2010	This is a comprehensive, thirty-year plan for transit improvements for the St. Louis region.
Regional Transportation Plan-2040	EWGCOG	2011	This is the long-range vision for how the region's surface transportation system will develop over the next three decades.
Gateway Bike Plan	GRG EWGCOG	2011	This plan identifies specific routes for a complete and connected bicycle network in St. Louis County, St. Louis City and the urbanized communities of St. Charles County. The plan also provides specific action strategies for implementing the plan.
Local Land Use Planning Documents	St. Louis Webster Groves	Various	Other local land use planning documents, including the St. Louis Strategic Land Use Plan, the Webster Groves Development Foundation, and other available local planning documents will be reviewed and considered as a part of the EIS process.

**Note:** Copies of the above planning documents are available for review on the project website at [southcountyconnector.com](http://southcountyconnector.com).

**Abbreviations:**

**County** = St. Louis County

**FTA** = Federal Transit Administration

**MoDOT** = Missouri Department of Transportation

**EWGCOG** = East-West Gateway Council of Governments

**GRG** = Great Rivers Greenway District



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## **Chapter 3**

# **Alternatives**

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### **3.0 INTRODUCTION**

This chapter presents the alternatives that were evaluated for the proposed South County Connector study. These alternatives are the result of an extensive public and agency coordination process, combined with environmental and technical analyses. The identification, consideration, and analysis of alternatives are fundamental to objective decision-making during the NEPA process. Therefore, the purpose of this chapter is to describe the process used to identify the reasonable alternatives that are being carried forward into detailed analysis in Chapter 4, Affected Environment and Environmental Consequences.

The identification of alternatives included the following key steps, which are discussed in detail in this chapter.

- Identify Preliminary Alternative Concepts
- Conduct Alternatives Screening Process
- Identify Roadway Design Criteria
- Conduct Traffic Demand Studies
- Refine the Reasonable Alternatives
- Describe the Build Alternatives Being Carried Forward for Detailed Analysis
- Summarize the Alternatives Evaluation
- Conduct Agency and Public Outreach

### **3.1 PRELIMINARY ALTERNATIVE CONCEPTS**

There were a wide range of initial alternative concepts considered as a part of the EIS process. Many of the concepts were derived from some of the earlier planning studies in the project area. The following is a description of these preliminary alternative concepts.

#### **3.1.1 No Build Alternative**

The No Build Alternative assumes that the existing roadway system would remain in its present configuration and a new roadway facility would not be constructed. Only planned minor short-term safety and maintenance activities, including pavement overlays and routine maintenance, would be included. The No Build Alternative is always included in EIS documents to create a baseline to which other alternatives can be compared. Since this alternative assumes that a new connector would not be constructed, many impacts, positive and negative, associated with a new facility would not occur. These impacts would include expenditure of funds; land use changes that include converting existing development or public lands into highway right-of-way, potential increased economic development, improved multi-modal accessibility and improved safety. The No Build Alternative is not a no-cost concept, since maintenance and repair of the existing roadway infrastructure would be needed to ensure the continued transportation use of the corridor.

### **3.1.2 Transportation System Management and Travel Demand Management**

The Transportation System Management (TSM) Alternative focuses on making the existing system more efficient, without constructing major infrastructure improvements. Techniques could include minor roadway upgrades, adding or upgrading traffic signals, and improving signage and route guidance. Minor roadway upgrades would generally be implemented within existing right-of-way and could include improved interchange configurations, surface street intersection improvements, constructing new turn lanes, and lane/shoulder widening.

In addition to these TSM options, there are also Travel Demand Management (TDM) measures that may be promoted to reduce congestion on existing transportation infrastructure. For example, encouraging commuters or employers to use modes other than single occupant vehicles, altering the time and location of trips (flexible work hours), supporting ridesharing, and supporting increased transit use are typical TDM measures. While these measures could be encouraged, they would be difficult to control due to limits of authority, employers' work schedule requirements, and personal preferences of commuters.

### **3.1.3 Preliminary Build Alternatives**

During the EIS planning process, the Study Team identified a number of potential build alternatives, including improvements along existing roadway corridors, as well as potential new roadway alignments. These alternatives were categorized into five corridors, with alignment variations within each corridor. The following is a general description of the five alternative corridors that were considered. Exhibits 3-1 through 3-5 depict the preliminary corridors under consideration.

#### **3.1.3.1 Laclede Station Road Corridor**

The Laclede Station Road Corridor includes roadway improvements on existing alignment from Hanley Road near Flora Avenue, continuing south along Laclede Station Road to Murdoch Avenue, as depicted in Exhibit 3-1. The alignment then continues from Murdoch Avenue to River Des Peres Boulevard with optional connections to either the existing Murdoch Cut-Off (yellow line), or a potential new connection via an extension of Murdoch Avenue (orange line). Utilizing an extension of Murdoch Avenue would require a new bridge underpass at the Burlington Northern Sante Fe (BNSF) Railroad. Improvements along this corridor would likely entail widening the existing roadways with additional through-lanes to accommodate the forecasted traffic demand. This alternative would also include interchange improvements at Interstate 44 and the Laclede Station Road/Murdoch Avenue exit.

#### **3.1.3.2 Shrewsbury Avenue Corridor**

This corridor generally follows Shrewsbury Avenue with a connection to Hanley Road on the north, utilization of existing roadways through the city of Shrewsbury, and connections to River Des Peres Boulevard or Mackenzie Road on the south, as depicted in Exhibit 3-2. Two options were considered for making the connection to Hanley Road: an alignment through Deer Creek Center (orange line) or an option south of Deer Creek through residential areas (blue line). Various options through the southern portion of the corridor were considered, including the use of one-way or two-way streets on Lansdowne Avenue (orange line), Murdoch Avenue (green line), and/or Weil Avenue (red line). While the one-way options would likely not require roadway widening, significant changes in access would occur. The two-way option would require widening the roadway on either one side or both sides. Options for connections from Shrewsbury Avenue to the local roads included either 90-degree or curved connections. For the southern terminus, options included direct connections to River Des Peres Boulevard or connection directly to Mackenzie Road through the Mackenzie Pointe Shopping Center (yellow

line). This alternative would also include interchange improvements at Interstate 44 and Shrewsbury Avenue.

#### **3.1.3.3 Local Roads Corridor**

The Local Roads Corridor is an option that utilizes existing infrastructure, to the extent practical, to minimize cost and impacts, as depicted in Exhibit 3-3. This option would include converting Laclede Station Road and Shrewsbury Avenue to one-way streets. Shrewsbury Avenue would be one-way to the north and Laclede Station Road would be one-way to the south. Options on the north would include construction of a new one-way connection to Hanley Road, either through Deer Creek Center (orange line) or south of Deer Creek (yellow line). These one-way streets would connect to Murdoch Avenue, which would likely require widening to accommodate the forecasted traffic demand. The alignment would then continue from Murdoch Avenue to River Des Peres Boulevard with optional connections to either the existing Murdoch Cut-Off (green line), or a potential new connection via an extension of Murdoch Avenue (orange line). Utilizing an extension of Murdoch Avenue would require a new bridge underpass at the Burlington Northern Sante Fe (BNSF) Railroad. This option would not include any interchange improvements with Interstate 44.

#### **3.1.3.4 River Des Peres Boulevard Extension Corridor**

The River Des Peres Boulevard Extension Corridor would be essentially on new alignment. From the north, alignment options would be similar to the Shrewsbury Avenue Corridor with an alignment from Hanley Road either through Deer Creek Center (orange line) or south of Deer Creek through residential areas (blue line), as depicted in Exhibit 3-4. Independent of which of those alignments would be selected, the proposed roadway would continue south either through the Laclede Gas property east of Shrewsbury Avenue (orange and blue lines) or through the Big Bend Industrial Court (yellow line). A new full interchange at Interstate 44 would be included as a component of this alternative. Two options for crossing Interstate 44 were considered: through the Shrewsbury MetroLink Station property (yellow line) and west of the BNSF Railroad (orange line). If the option through the Shrewsbury MetroLink Station is carried forward, the alignment would be on the west side of the Station in the area where existing parking facilities are located. Reconstruction of Metro's parking facilities would be included in this option. In addition, improvements to, or replacement of, the BNSF Railroad Bridge over Lansdowne Avenue would be required. On the south, connection options include tying directly into River Des Peres Boulevard or connecting to Mackenzie Road through the Mackenzie Pointe Shopping Center. An optional connection via Weil Avenue to River Des Peres Boulevard was also considered in lieu of going through Mackenzie Pointe.

#### **3.1.3.5 South Outer Road Corridor**

The primary feature of the South Outer Road Corridor is a proposed frontage road that would be situated immediately south of and parallel to Interstate 44 (green line), as depicted in Exhibit 3-5. This frontage road would provide east-west connectivity from Shrewsbury Avenue to a new north-south roadway near the Shrewsbury MetroLink Station. This corridor minimizes the use of residential streets for east west access. This frontage road would also connect to new ramps to and from Interstate 44. The Shrewsbury Avenue Interchange would be modified to accommodate the new frontage road with exit ramps from eastbound Interstate 44 and on ramps from Shrewsbury Avenue to westbound Interstate 44. A new partial interchange near the Shrewsbury MetroLink Station would complete the traffic movement to and from Interstate 44.

The South Outer Road Corridor is similar to the River Des Peres Boulevard Corridor at the north and south connections. This alternative is also similar to the River Des Peres Boulevard

Corridor in that proposed alignments could go either through the Laclede Gas property east of Shrewsbury Avenue or through the Big Bend Industrial Court.

Two options for crossing Interstate 44 were considered: a bridge that would cross over Interstate 44 and run through the Shrewsbury MetroLink Station (yellow line), or an option that would include a new roadway under Interstate 44 and aligned west of the BNSF Railroad (orange line). The new South Outer Road would intersect with one of these Interstate crossing options. The alignment options south of the Shrewsbury MetroLink Station and southern termini options would be similar to the River Des Peres Boulevard Corridor.

### 3.2 ALTERNATIVES SCREENING PROCESS

The evaluation of alternatives consisted of a two-phase screening process:

- **Initial Screening:** This screening is based on how well the preliminary alternative corridors met the purpose and need for the proposed project. Alternatives that clearly did not meet the purpose and need of the study were dismissed from consideration.
- **Secondary Screening:** Alternatives that met purpose and need were carried forward into secondary screening, which included a comparison of the retained alternatives relative to the social and economic factors, environmental factors, and feasibility to construct.

The following sections discuss the screening process in further detail.

#### 3.2.1 Initial Screening

The first step in considering alternatives focused on the ability of the alternatives to satisfy the purpose and need described in Chapter 2. Accordingly, the criteria for the initial screening focused on factors that specifically relate to the purpose and need for the proposed project. As an example, for the need to improve roadway connectivity, the screening criteria included an analysis of whether the alternatives would improve north-south access through the study corridor and if interstate access could be improved. Table 3-1 illustrates each of the criteria used for the initial screening evaluation.

The initial screening focused on each of the five build alternative corridors. Even though the No Build Alternative does not meet purpose and need, it is retained for analysis in the EIS as required by the Council on Environmental Quality (CEQ). Therefore, it is included as a part of the initial screening, along with the TSM and TDM Alternatives.



**Table 3-1: Initial Screening Criteria**

<b>Primary Needs</b>	
Roadway Connectivity	Does the alternative improve north-south access?
	Does the alternative improve interstate access?
Roadway Congestion and Capacity	Does the alternative reduce congestion on existing roadway network?
	Does the alternative reduce delays at existing intersections?
	Does the alternative improve traffic conditions in residential neighborhoods?
	Does the alternative provide capacity to meet current and future travel demand?
Roadway Safety	Does the alternative improve safety at high accident locations?
<b>Other Goals and Objectives</b>	
Multi-modal Considerations	Does the alternative improve safety, connectivity, and accessibility for bicyclists and pedestrians?
	Does the alternative accommodate potential future extension of MetroLink?
Land Use and Economic Development Opportunities	Does the alternative provide land use and economic development opportunities?
	Does the alternative improve access to existing commercial and major employment centers?
	Does the alternative improve access to transit and other activity centers?
Consistency with Local and Regional Plans	Is the alternative consistent with local and regional plans?

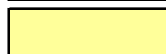
Table 3-2 was developed to make a side-by-side comparison of the ability of each potential alternative to meet the criteria associated with the purpose and need of the proposed action. Each of these criteria was evaluated to help determine whether or not the alternative meets, partially meets, or does not meet the purpose and need of the proposed action. For example, if an alternative clearly had the potential to meet or exceed a purpose and need screening criterion, the table cell was given a blue shade. If an alternative clearly did not have the potential to meet the criterion, the table cell was given a red shade. A yellow shade was used if the alternative had the potential to partially meet the criterion. To be retained for further consideration in secondary screening, the alternatives had to at least partially meet each criterion. The initial screening also included how well the corridors could address other goals, such as tying into transit, improving connectivity for bicyclists and pedestrians, and economic development opportunities.

Table 3-2: Initial Screening

Purpose and Need		Initial Screening Evaluation Criteria		Alternatives				
Primary Needs		No Build	Transportation System and Travel Demand Management	Laclede Station Road Corridor	Shrewsbury Avenue Corridor	Local Roads Corridor	River Des Peres Boulevard Extension Corridor	South Outer Road Corridor
Roadway Connectivity	Improve north-south access							
	Improve interstate access							
Roadway Congestion and Capacity	Reduce congestion on existing roadway network							
	Reduce delays at existing intersections							
	Improve traffic conditions in residential neighborhoods							
	Provide capacity to meet current and future travel demand							
Roadway Safety	Improve safety at high accident locations							
Other Goals and Objectives								
Multi-modal Considerations	Improve safety, connectivity, and accessibility for bicyclists and pedestrians							
	Accommodate potential future extension of MetroLink							
Land Use and Economic Development Opportunities	Provide land use and economic development opportunities							
	Improve access to existing commercial and major employment centers							
	Improve access to transit and other activity centers							
Consistency with Local and Regional Plans	Consistency with local and regional plans							
Initial Screening Determination		Retain as required by NEPA	Eliminate*	Eliminate	Eliminate	Eliminate	Retain for Secondary Screening	Retain for Secondary Screening



Alternative clearly has the potential to meet or exceed criterion.



Alternative may have the potential to partially meet criterion.



Alternative clearly does not have the potential to meet criterion by itself.

\* Transportation System Management and Travel Demand Management components can be included as part of a preferred Build Alternative.

### **3.2.1.1 Alternatives Eliminated by Initial Screening**

In compliance with CEQ Section 1502.14(a), Agencies shall "...for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." Based on the initial screening analysis, the following alternative corridors were eliminated from further consideration because they do not meet the purpose and need:

#### *Transportation System Management and Travel Demand Management*

Although the Transportation System Management (TSM) and Travel Demand Management (TDM) alternatives may address some capacity issues, this alternative does not address system connectivity, may only partially improve interstate access, and would not fully alleviate congestion caused by vehicles using the local road system to travel to and from south St. Louis County and central St. Louis County. Further, this alternative would not meet the objective of improving access to transit facilities, existing commercial and major employment centers, or other activity centers within the corridor.

In the level of service analysis for the design year 2040 that was presented in Chapter 2, the traffic model was set up to optimize the signal phasing, yet showed several roadways and intersections that degraded to failure levels. The desired transportation facility needs to alleviate congestion, provide system connectivity and improve safety. The TSM and TDM alternatives, by themselves, do not address the purpose of and need for the project; therefore, were eliminated from further consideration. However, there may be TSM concepts that could be included as a part of any of the build alternatives to maximize the return on investment in new roadway infrastructure. TDM measures such as ride-sharing, increased transit use, and flexible work hours should also be encouraged as part of a regional travel demand management solution.

#### *Laclede Station Road Corridor*

This corridor could improve north-south access and would provide improved full interstate access with ramp modifications at the Laclede Station Road and Interstate 44 Interchange. While these improvements would potentially reduce congestion in the vicinity of the Interstate 44 interchange, this option would not reduce traffic on the local residential streets. Murdoch Avenue would be widened under this alternative to increase roadway capacity and to accommodate projected traffic levels at an acceptable level of service. Motorists would still maneuver through the local east-west residential neighborhood to access the Shrewsbury MetroLink Station or to connect to Interstate 55 via River Des Peres Boulevard. Therefore, this alternative was eliminated from further consideration since it does not meet the primary need of improving traffic conditions in residential neighborhoods.

#### *Shrewsbury Avenue Corridor*

This corridor would include reconfiguration of the Shrewsbury Avenue and Interstate 44 Interchange to provide full interstate access. These improvements could reduce congestion at the Laclede Station and Interstate 44 Interchange, but this option would not reduce traffic on the local residential streets. Murdoch Avenue would be widened under this alternative to increase roadway capacity and to accommodate projected traffic levels at an acceptable level of service. Motorists would still maneuver through the local residential street network to access the Shrewsbury MetroLink Station or to connect to Interstate 55 via River Des Peres Boulevard. Therefore, this alternative was eliminated from further consideration since it does not meet the primary need of improving traffic conditions in residential neighborhoods.

### Local Roads Corridor

This option would include converting existing roadways in the project corridor to one-way streets to improve roadway capacity through the project area. However, this alternative would have a significant impact on the residential neighborhoods due to increased traffic on local roads and changes in traffic patterns associated with the one-way streets. Further, this option would not address the primary need for improved interstate access. For these reasons, this alternative was eliminated from further consideration.

#### **3.2.1.2 Alternatives Retained for Secondary Screening**

Based on the results of the initial screening process, the River Des Peres Boulevard Extension and South Outer Road corridors advanced to secondary screening; the remaining corridors were eliminated. In addition to these two build alternative corridors, the No Build Alternative is required to be retained for full environmental analysis. Therefore, this alternative is included in the secondary screening analysis.

#### **3.2.2 Secondary Screening**

The two alternative corridors retained (River Des Peres Boulevard Extension and South Outer Road) were evaluated in a secondary screening process using a relative comparative analysis of the following evaluation criteria.

- Social/Economic Considerations
- Environmental Impacts
- Feasibility to Construct

For the secondary screening process, the retained alternative corridors were separated into four sections within the project area since the corridors have common alignment options. For example, on the northern section of the study area, both the River Des Peres Boulevard Extension Corridor and the South Outer Road Corridor have the same alignment options: north of Deer Creek or south of Deer Creek. Similarly, the southern section and the southern terminus of the project are the same for both of these alternatives. The primary difference between the two alternatives occurs within the central section. Therefore, instead of analyzing the corridors as a whole, they were separated into the following four sections:

##### **3.2.2.1 Northern Section**

This section begins on the north end of the project limits on Hanley Road near Flora Avenue and continues south and east, parallel to Deer Creek, then extends to Big Bend Boulevard. There are two options within this section of the project, and each is common to both the River Des Peres Boulevard Extension and the South Outer Road corridors.

##### North of Deer Creek

This option would include an alignment that parallels Deer Creek on the north, through Deer Creek Center. There is an existing roadway, Oxford Boulevard, located south of Deer Creek Center parking lot that currently provides access from Laclede Station Road to Big Bend Boulevard. There is also an existing trail that follows Deer Creek just south of this roadway and connects to Deer Creek Park under the Laclede Station Road Bridge. A large portion of Deer Creek Center lies within the Deer Creek floodway and floodplain.

### South of Deer Creek

This option would include an alignment that generally follows Marshall Avenue from Laclede Station Road, south of Deer Creek to the intersection of Key West Avenue and Shrewsbury Avenue. The Deer Creek floodplain is narrower on the south side. There are several residences and one business located along this route, which have direct access onto Marshall Avenue or Key West Avenue.

#### **3.2.2.2 Central Section - River Des Peres Boulevard Extension Corridor**

This section begins at Big Bend Boulevard and follows a route either through the Big Bend Industrial Court or through the Laclede Gas property. Both options would intersect Deer Creek, the BNSF Railroad, and Ameren Transmission Lines. Both options also include a proposed new full interchange at Interstate 44. Following are the unique features of the options:

##### Through Big Bend Industrial Court

This option follows a route along the Big Bend Industrial Court, which includes several existing industrial properties. The Mississippi River Gas Line Pressure Reducing Station is also located on this alignment.

##### Through Laclede Gas Property

This option follows a route through the Laclede Gas property, a portion of which has been identified as a Superfund Site, and a portion of the Carr Lane property, a site that was remediated as a part of the Missouri Department of Natural Resource's Brownfields/Voluntary Cleanup Program (BVCP).

#### **3.2.2.3 Central Section - South Outer Road Corridor**

This central section also begins at Big Bend Boulevard and includes the following options:

##### Shrewsbury Avenue to South Outer Road

One option follows a route along Shrewsbury Avenue, across Interstate 44 to a proposed new outer road. This South Outer Road would parallel Interstate 44 on the north side of the Shrewsbury Family Aquatic Center, and then would intersect at-grade with a new connector near the Shrewsbury MetroLink Station. This option includes new ramps at the Shrewsbury Avenue Interchange to accommodate traffic in all directions with a full interchange.

##### Interstate 44 Underpass to South Outer Road

This option would extend either through the Laclede Gas property or the Big Bend Industrial Court, like the Central Section for the River Des Peres Boulevard Extension Corridor. However, this option would include construction of a new underpass at Interstate 44 that would connect at grade to a new outer road near the Shrewsbury MetroLink Station. A partial interchange with Interstate 44 would also be included under this option and would utilize the existing partial interchange at Shrewsbury Avenue to complete access to and from Interstate 44 in each direction.

#### **3.2.2.4 Southern Section**

This section begins just south of Interstate 44 and extends to the southern terminus of the project. There are two general options in this section that are common to both the River Des Peres Boulevard Extension and the South Outer Road corridors.



Through MetroLink Station

The first option would be to construct the new roadway through the Shrewsbury MetroLink Station parking lot and connect directly into River Des Peres Boulevard at the northern section of River Des Peres Park.

West of BNSF Railroad

This option would include a roadway on new alignment on the west side of the BNSF Railroad through existing residential and commercial property. This option would then cross back under a new railroad bridge near Lansdowne Avenue and parallel the BNSF Railroad on the east to a southern terminus at River Des Peres Boulevard or Mackenzie Road.

**3.2.2.5 Southern Terminus**

There are two general options for the southern terminus of the project, which are common to both the River Des Peres Boulevard Extension and the South Outer Road corridors.

River Des Peres Boulevard Extension

This option would include connecting directly to River Des Peres Boulevard, which is the roadway that currently bisects River Des Peres Park and extends from the Shrewsbury MetroLink Station south to Interstate 55. This option could also include improvements at the Chippewa/Watson Road Interchange to improve connectivity to Mackenzie Road, which could provide additional access to Interstate 55 further south towards the South County area.

Mackenzie Road through Mackenzie Pointe

This option would include connecting directly to Mackenzie Road through Mackenzie Pointe, a retail shopping complex. This option could also include another connection to River Des Peres Boulevard via Weil Avenue to improve connectivity to Interstate 55.

Table 3-3 presents the results of the secondary screening process.

Table 3-3: Secondary Screening

Secondary Screening Criteria	Comparative Analysis of Alternatives Carried Forward to Secondary Screening										
	No Build	Northern Segment		River Des Peres Central Segment		South Outer Road Central Segment		Southern Segment		Southern Terminus	
		North of Deer Creek	South of Deer Creek	Big Bend Industrial Court	Laclede Gas Property	I-44 Underpass to Outer Road	Shrewsbury Ave to Outer Road	Through MetroLink	West of BNSF	River Des Peres Blvd	Mackenzie Road
Social/Economic Impacts											
Right-of-Way											
Residential Relocations											
Business Relocations											
Environmental Justice											
Community Cohesion/Division											
Changes in Access											
Economic Development Opportunities											
Environmental Impacts											
Floodplains/Floodway											
Wetlands and/or Waters of the U.S.											
Hazardous Materials											
Cultural Resources											
Parklands/Section 4(f) Resources											
Noise											
Air Quality											
Feasibility to Construct											
Constructability											
Cost (ROW, Construction, Relocations)											
ROW Cost											
Construction Cost											
Railroad Crossings											
Utility Relocations											
Secondary Screening Determination	Retain as required by NEPA	Retain for Detailed Analysis	Eliminate	Retain for Detailed Analysis	Retain for Detailed Analysis	Eliminate	Eliminate	Retain for Detailed Analysis	Eliminate	Retain for Detailed Analysis	Eliminate



Alternative is better than other alternatives in the specific category. (i.e. Less impacts, more feasible than other alternatives)



Alternative is between other alternatives in the specific category. (i.e., Some impacts, but not necessarily significant)



Alternative is worse than other alternatives in the specific category. (i.e., Significant impacts, not as feasible as other alternatives)

### **3.2.2.6 Alternatives Eliminated by Secondary Screening**

Based on the secondary screening review process, the following options have been eliminated from further consideration.

#### *Northern Section – South of Deer Creek*

The option to construct a new roadway to the south of Deer Creek has been eliminated from further consideration. This option would require more right-of-way when compared to the North of Deer Creek option. This option would also require the relocation of several residences and one business, and would impact community cohesion. In addition, this option would have a substantially higher cost and constructability issues associated with the right-of way acquisitions and construction of a new or modified structure on Laclede Station Road over Deer Creek. Finally, based on comment forms received as a part of the “Alternatives Open House” meetings, there has been significant public opposition to this option due to the residential impacts.

#### *Central Section – South Outer Road Corridor*

In the Central Section, there were two corridors considered: the River Des Peres Boulevard Extension Corridor and the South Outer Road Corridor. While both of these corridors would meet the purpose and need for the project, the River Des Peres alternative would provide better connectivity and access to Interstate 44. The South Outer Road Corridor would have significant impacts to the Shrewsbury Family Aquatic Center, which is a Section 4(f) resource.<sup>12</sup> Based on Section 4(f) legislation, as established under the U.S. Department of Transportation Act of 1966, the FHWA will not approve a project that requires use of Section 4(f) property unless there is “1) no prudent and feasible alternative to using that land, and 2) includes all possible planning and mitigation to minimize harm to the park...”. Since there is another feasible option (River Des Peres Boulevard Extension Corridor) within the central section that would provide better connectivity and would not substantially affect this park resource, the South Outer Road Corridor has been dismissed from further consideration.

#### *Southern Section – West of BNSF Railroad*

This option would require acquisition of several businesses and residences that are adjacent to the BNSF Railroad right-of-way. There are also significant costs and constructability issues associated with a new structure that would be needed for the BNSF Railroad over Lansdowne Avenue. Therefore, this option has been eliminated from further consideration.

#### *Southern Terminus – Mackenzie Road through Mackenzie Pointe*

To avoid potential impacts to River Des Peres Park, an alternative was considered to connect directly to Mackenzie Road at Watson Road, through the Mackenzie Pointe shopping complex. Even though this option would minimize or avoid park impacts, it was determined through further investigation that this alternative would not be prudent due to the significant impacts to the large retail complex, as well as cost and constructability issues associated with geological and topographical constraints. Further, this alternative would not provide acceptable levels of service to accommodate future traffic without some connection to River Des Peres Boulevard, which would result in impacts to the park. Therefore, this option was eliminated from further consideration. Even though this option has been eliminated, potential options for improving the Watson Road and River Des Peres Boulevard Interchange will be considered as a part of this project to improve connectivity to Mackenzie Road.

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<sup>12</sup> Section 4(f) property includes publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance.

### 3.2.2.7 Alternatives Retained for Detailed Analysis

The following options are retained for further consideration within the alternatives analysis.

#### No Build Alternative

The No Build Alternative does not address the needs identified in the project purpose and need and fails to meet the objectives of the project. If the No Build alternative is chosen, levels of service that are already failing will worsen, and some levels of service that are not failing now can be expected to degrade to failing levels by the design year 2040. Traffic volumes on local residential streets will likely increase if the No Build strategy is selected. Accidents are likely to increase due to the additional traffic and poor operational performance of the roadway system. Even though the No Build Alternative does not meet the purpose and need of improving north-south connectivity, reducing congestion, and improving safety, this alternative will be carried forward for further evaluation in this EIS and will serve as a benchmark against which the impacts of other alternatives can be compared.

#### Build Alternatives

Based on results of both the initial and secondary screening processes, the following build alternatives within each section of the corridor have been retained for further analysis.

- **Northern Section** – An alignment north of Deer Creek through Deer Creek Center will be carried forward for further analysis.
- **Central Section** – Alignments through the Big Bend Industrial Court and through the Laclede Gas property will both be carried forward for detailed study. An option for a new full interchange with Interstate 44 will also be carried forward.
- **Southern Section** – An alignment that runs through the Shrewsbury MetroLink Station parking lot will be carried forward for further analysis.
- **Southern Terminus** - An alignment that connects directly to River Des Peres Boulevard will be carried forward and will also include consideration of potential improvements for better connectivity to Mackenzie Road.

Exhibit 3-6 depicts the revised study area based upon these alignments to be carried forward.

The following sections present a more detailed analysis of the alignments including: 1) design criteria for the proposed South County Connector, 2) traffic demand modeling methodology and results, and 3) refinement of the alignments and specific design features.

## 3.3 ROADWAY DESIGN CRITERIA

The design criteria used to develop the reasonable alternatives was adopted from various industry standards that govern the design of roadway facilities. The build alternatives were developed utilizing these criteria to determine the footprint for each alternative. Some design exceptions from these criteria are anticipated to achieve a more practical design for the build alternatives. The sources used for the development of the design criteria include:

- A Policy on Geometric Design of Highways and Streets, AASHTO, 2004
- MoDOT Engineering Policy Guide
- St. Louis County Standard Specifications for Highway Construction
- St. Louis County Standard Drawings

- Roadside Design Guide, AASHTO, 4<sup>th</sup> Edition, 2011

The design criteria used for the proposed South County Connector and the Interstate 44 ramps, which were compiled from the sources listed above, are presented in Table 3-4.

**Table 3-4: Design Criteria**

<b>Roadway</b>	<b>Interstate Ramps</b>	<b>South County Connector</b>
Design Speed	45 mph	40 mph
Minimum Radius	643 ft.	533 ft.
Maximum Vertical Grade	5% - 7%	7%
Lane Width	12-14 ft.	12 ft.

The design criteria used for the minimum vertical clearance is dependent upon the type of facility that is being crossed. The following minimum clearances were used for the development of the build alternatives:

- Minimum Vertical Clearance for Grade Separation Structures: 16'6" Minimum (Including Shoulders)
- Minimum Vertical Clearance for Railroad Grade Separation Structures: 23'4" Minimum

Exhibit 3-7 depicts the potential typical roadway section for the South County Connector.

### 3.4 TRAFFIC DEMAND STUDIES

An analysis of future traffic conditions was conducted to evaluate the impacts of the South County Connector to the study area and analyze alternatives for the project. To conduct these evaluations, estimates of future traffic volumes with and without the South County Connector were developed.

#### 3.4.1 Approach

To estimate the changes in traffic patterns as a result of the South County Connector, the regional travel demand model was utilized. The travel demand model is maintained by the East-West Gateway Council of Governments (EWGCOG). EWGCOG uses the CUBE Voyager<sup>13</sup> model platform for highway modeling. This program incorporates socioeconomic data and the highway network to estimate traffic demands.

The regional model was calibrated based upon recent traffic volume counts and socioeconomic data within the study area to provide greater accuracy. The calibrated model was then used to generate projected traffic volumes throughout the study area for the design year 2040.

Three scenarios were analyzed for the South County Connector: 2040 No Build, 2040 Low-Build, and 2040 High-Build. The two Build scenarios are presented to identify the effects of different design elements (i.e. number of lanes, speed) on the forecasted volumes. In particular,

<sup>13</sup> FHWA's Travel Model Improvement Program, Volpe National Transportation Systems Center, USDOT, April 27, 2009. [http://media.tnponline.org/clearinghouse/tmip/peer\\_review/evaluation/evaluation.pdf](http://media.tnponline.org/clearinghouse/tmip/peer_review/evaluation/evaluation.pdf)



the 'High-Build' reflects six lanes on South County Connector with a 45 mph design speed, and additional capacity between eastbound Interstate 44 and northbound South County Connector. The "Low-Build" reflects a typical 'base' design with a four-lane corridor at a 40 mph design speed. Table 3-5 presents the projected peak hour traffic volumes (VPH – vehicles per hour) for these three scenarios at key roadway segments.

**Table 3-5: 2040 Projected Traffic Volumes**

Location	Peak Hour Traffic Volumes (VPH)					
	No Build		Low-Build		High-Build	
	AM	PM	AM	PM	AM	PM
Hanley Road South of Manchester Road	3,983	4,643	4,478	5,237	4,953	5,600
Big Bend Blvd South of Manchester Road	1,785	1,871	2,198	2,401	2,106	2,343
Mackenzie Road South of Watson Avenue	1,720	1,020	1,667	982	1,870	1,065
Laclede Station Road South of Murdoch Avenue	2,495	2,869	1,949	2,472	1,752	2,340
Interstate 44 Off Ramp @ Laclede Station Road	1,296	1,304	734	727	287	494
River Des Peres Blvd South of Watson Avenue	1,367	2,138	1,740	2,208	1,977	2,489
Lansdowne Avenue East of River Des Peres Blvd	1,314	1,966	1,334	1,846	1,826	2,255

Source: Bernardin, Lochmueller & Associates, Inc., 2011

### 3.4.2 Key Observations of Travel Demand Modeling

In addition to generating projected traffic volumes, analysis of the results of the travel demand modeling provides the following observations:

- North of the study area, Hanley Road and Big Bend Boulevard would be the primary recipients of additional traffic using the South County Connector. The South County Connector will maximize demands on the improved Hanley Road corridor. However, the Hanley Road interchange with Interstate 64 is expected to be a future bottleneck. Therefore, southbound traffic heading away from this interchange during the PM peak hour is relatively constant in all scenarios (No Build, Low-Build, High-Build) reflecting the influence of that bottleneck.
- South of the study area, the South County Connector will increase traffic on River Des Peres Boulevard and on Mackenzie Road. These increases would be limited to a few hundred vehicles in each direction during the peak hours. Operations at major signalized intersections to the south (i.e., River Des Peres Boulevard/Gravois, Mackenzie/Gravois) should not be significantly impacted.
- The multitude of connections within the immediate study area (i.e., Watson Road, Lansdowne Avenue, Interstate 44, Big Bend Boulevard, Laclede Station Road, etc.) would carry a considerable amount of "local" traffic to the South County Connector, resulting in highly variable traffic demands along the corridor and heavy turning movements at several intersections. Assuming traditional at-grade intersections, it may be difficult to achieve desirable peak hour levels of service at some locations along the corridor under both the Low-Build and High-Build scenarios, most notably at Big Bend Boulevard intersection. Additionally, improvements may be needed to the existing River Des Peres Boulevard interchange with Watson Road/Chippewa Street to accommodate projected traffic increases.
- Relief to other roadways in the project area would be most pronounced along Shrewsbury Avenue, Lansdowne Avenue, Marshall Avenue, Wabash Avenue, Jamieson Avenue, Big Bend Boulevard (southwest of the South County Connector),

and the Interstate 44 ramps at Laclede Station Road/Murdoch Avenue. Conversely, traffic volumes along Laclede Station Road south of Interstate 44 would not be significantly affected. The combination of Laclede Station Road's direct connection to Hanley Road, anticipated relief of the bottlenecks along Laclede Station Road at Interstate 44 and Big Bend Boulevard, and the number of origins/destinations located along Laclede Station Road would be expected to deter more significant diversions to the South County Connector.

- Reductions in traffic would occur along major north-south corridors within the City of St. Louis, including Watson Road and Hampton Avenue. Also, a small decrease in westbound traffic would occur on Interstate 64 in the AM peak hour due to fewer South City motorists using Interstate 64 to access central St. Louis County.

Further analysis and quantification of these observations is presented in Section 3.4.5 Design Year Intersection Analysis.

### **3.4.3 Comparison of Low-Build and High-Build Alternates**

In addition to the overall observation of the travel demand modeling results, a closer analysis allows for the comparison between the two build scenarios (Low-Build and High-Build). This comparison was a factor in developing the scale of the South County Connector (i.e. number of lanes, etc.).

The two scenarios have significant differences in the amount of traffic attracted to the South County Connector. The High-Build scenario may attract 1,000 to 2,000 more peak-hour vehicles to the corridor than the Low-Build scenario and would further diminish traffic volumes along parallel corridors (i.e., Wabash, Shrewsbury, and Jamieson).

Projection of traffic for 2040 without the South County Connector results in unacceptable levels of service and extensive traffic delays along the Laclede Station corridor. Both the Low-Build and High-Build scenarios result in acceptable LOS along the South County Connector. The additional reduction in delays between the High-Build and Low-Build are minimal, thus the additional traffic benefit of the High-Build scenario is small. Even though the High-Build Scenario does provide minor operational benefits over the Low-Build Scenario, these benefits would not outweigh the substantial higher costs and environmental impacts associated with the High-Build scenario. Therefore, the Low-Build scenario is recommended for the proposed South County Connector.

### **3.4.4 Traffic Pattern Changes**

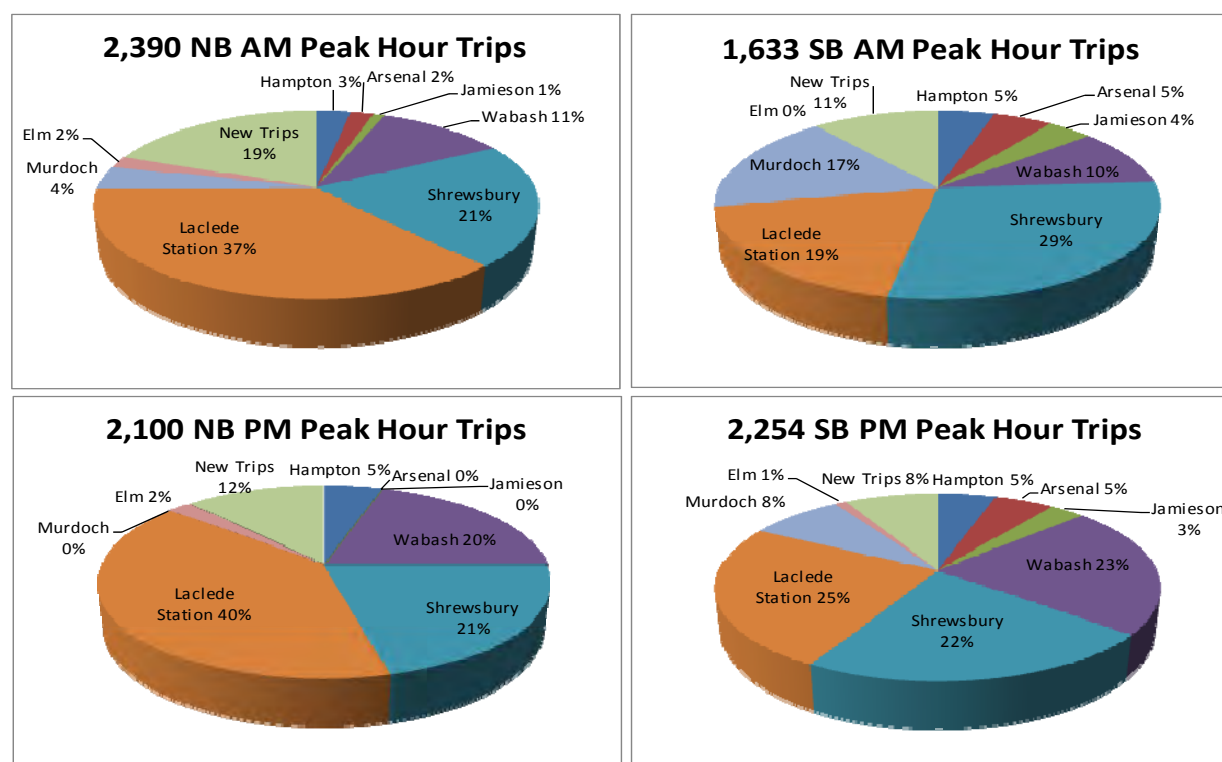
Comparison of the 2040 traffic volumes with and without the South County Connector reveals the impact that the project could have on traffic patterns within the study area. Changes in AM and PM peak-hour traffic volumes are shown in Exhibits 3-8 and 3-9, respectively. The most significant changes in traffic patterns exist on some of the roadways within Shrewsbury and Webster Groves; namely Shrewsbury Avenue, Murdoch Avenue, Lansdowne Avenue, and Key West/Marshall Avenue. These roadways currently provide connections between the discontinuous north-south arterials. A future South County Connector would divert traffic from the local roadways, allowing them to function in a manner more consistent with their roadway classification. Table 3-6 shows the percent change in traffic volumes on some of the key roadways in the project area.

**Table 3-6: Percent Change in Projected 2040 Peak Hour Traffic Volumes with South County Connector**

Roadway	Location (between)	2040 Volume Change	
		AM	PM
Laclede Station Road	Marshall Ave & Big Bend Blvd	-45%	-42%
Laclede Station Road	Big Bend Blvd & I-44 Ramps	-35%	-34%
Laclede Station Road	South of Murdoch	-9%	-2%
I-44 Off Ramp	at Laclede Station Road	-45%	-49%
I-44 On Ramp	at Murdoch	-33%	-40%
Marshall Avenue	Laclede Sta. Rd & Big Bend Blvd	-48%	-30%
Shrewsbury Ave	Big Bend Blvd & Lansdowne	-61%	-45%
Lansdowne	Shrewsbury & Murdoch Cut-Off	-66%	-45%
Mackenzie Road	South of Watson	-3%	9%
River Des Peres Blvd	South of Watson	24%	5%

Source: CMT Analysis, 2011

A new interchange at Interstate 44 and the proposed South County Connector would also divert trips from a number of existing crossings over Interstate 44. This diversion would substantially reduce traffic volumes and congestion on the existing Interstate 44 bridges, as shown in Figure 3-1.

**Figure 3-1: Proposed Traffic Diversions at Existing Interstate 44 Bridges**

Source: CMT Analysis, 2011

Figure 3-1 shows that a majority of the traffic utilizing the South County Connector would primarily be diverted from the adjacent crossings at Laclede Station Road, Shrewsbury Avenue, and Wabash Avenue; although some diversion occurs as far away as Hampton Avenue and Elm Avenue.

### 3.4.5 Design Year Intersection Analysis

Analysis of intersections throughout the study area was conducted for 2040 No Build and Build traffic projections. A comparison of the AM and PM peak-hour delays shows the direct impact the South County Connector would have on traffic operations within the broader study area. The South County Connector would improve traffic operations for a majority of the intersections and most will operate at an acceptable LOS in 2040 with the South County Connector. Table 3-7 and Exhibits 3-10 and 3-11 show the average delay and LOS for the No Build and South County Connector Build Alternatives at key intersections in the project area.

**Table 3-7: Average Delay and Level of Service for Design Year 2040**

Intersection	No Build		SCC	
	AM	PM	AM	PM
Marshall Ave & Shrewsbury	27.9 (C)	21.9 (C)	18.2 (B)	14.5 (B)
Marshall Ave & Laclede Station	66.6 (E)	119.6 (F)	14.3 (B)	32.7 (C)
Laclede Station & Big Bend	17.3 (B)	61.0 (E)	11.5 (B)	42.8 (D)
Laclede Station & I-44 EB Ramps	69.3 (E)	172.6 (F)	26.6 (C)	53.6 (D)
Murdoch & Laclede Station	26.1 (C)	67.6 (E)	19.8 (B)	45.6 (D)
Murdoch & Shrewsbury	21.7 (C)	19.6 (B)	15.1 (B)	18.7 (B)
Watson & Laclede Station	55.4 (E)	114.2 (F)	41.6 (D)	93.6 (F)
Watson & Mackenzie	17.4 (B)	29.6 (C)	18.1 (B)	33.5 (C)
Heege & Laclede Station	49.0 (D)	99.3 (F)	38.7 (D)	63.8 (E)
River Des Peres & EB Watson	465.7 (F)	88.7 (F)	11.9 (B)	16.4 (B)
Watson & NB River Des Peres	11.1 (B)	16.8 (B)	12.4 (B)	14.1 (B)
River Des Peres & WB Watson	22.0 (C)	18.5 (B)	11.7 (B)	14.8 (B)
River Des Peres & Gravois	34.7 (C)	56.4 (E)	31.2 (C)	63.2 (E)
Lansdowne & River Des Peres	20.0 (B)	36.1 (D)	20.2 (C)	29.9 (C)
I-55 NB Ramps & River Des Peres	19.4 (B)	15.5 (B)	19.7 (B)	15.5 (B)
I-55 SB Ramps & River Des Peres	12.1 (B)	25.5 (C)	12.3 (B)	21.7 (C)
Arsenal & McCausland	42.3 (D)	24.9 (C)	30.7 (C)	19.3 (B)
I-44 EB Ramps & Hampton	114.1 (F)	61.9 (E)	85.8 (F)	38.1 (D)
I-44 WB Ramps & Hampton	76.8 (E)	58.3 (E)	71.4 (E)	56.2 (E)
I-44 WB Ramps & Shrewsbury	19.4 (B)	23.9 (C)	--	--
I-44 & South County Connector	--	--	37.5 (D)	39.9 (D)

CMT Analysis, 2011

## 3.5 REFINEMENT OF REASONABLE ALTERNATIVES

The refinement of the Build Alternatives for the South County Connector included analysis of various options for each section along the corridor as depicted on Exhibit 3-6. This section summarizes the results of that analysis and includes recommendations of the options to be carried forward into detailed environmental analysis in Chapter 4, Affected Environment and

Environmental Consequences. Further detailed information regarding the alternatives and traffic studies is included in Appendix C, Alternatives and Traffic Analysis.

### **3.5.1 Northern Section**

This section begins at the northern end of the project limits on Hanley Road and extends south and east through the Big Bend Boulevard Intersection. Various options for the Hanley Road Connection, the Laclede Station Road Intersection, options through Deer Creek Center, and the Big Bend Boulevard Intersection are presented.

#### **3.5.1.1 Hanley Road Connection**

The northern terminus of the South County Connector is at Hanley Road near its intersection with Flora Avenue. This location matches the Hanley Road Phase 1 South project that is being planned by St. Louis County Highways and Traffic to improve and widen Hanley Road to six lanes, and to improve the Manchester Road and Hanley Road intersection. This upgraded corridor will provide an improved route to the central St. Louis County area.

Just north of the Union Pacific Railroad, Laclede Station Road becomes Hanley Road. The existing railroad bridge carrying two tracks of the Union Pacific Railroad over Laclede Station Road creates a potential bottleneck, especially once the Hanley Road corridor improvements are completed. Currently, four lanes travel under the railroad bridge. The results of the travel demand modeling show there will be a need for six lanes on the South County Connector from the northern terminus of the project to the proposed intersection of the connector with Laclede Station Road. Since projected traffic volumes would split at this intersection, only four lanes are proposed on the South County Connector south of this intersection. The following options were studied to provide these additional lanes.

#### Bridge over the Union Pacific Railroad

Hanley Road north of the railroad bridge drops quickly (over a 7% grade) to travel under the railroad. South of the bridge, the grade is relatively flat adjacent to Deer Creek. An alignment that would bridge over the Union Pacific Railroad would require a long distance to match the existing elevation on the south end and would place a significant amount of fill within the Deer Creek floodplain. The profile of Laclede Station Road would need to be raised to match the elevation of the South County Connector, requiring the replacement of the existing bridge over Deer Creek. Additionally, entrances into Deer Creek Park and commercial businesses south of the railroad tracks would not be possible with the elevated roadway.

#### Split outside lanes under existing bridge

The existing four lane section of Hanley Road under the Union Pacific Bridge is constrained by the piers for the bridge. The two additional lanes could be constructed on the other side of the piers if they are split from the current lanes, the existing fill slopes are excavated out, and retaining walls are constructed around the bridge abutments. The existing vertical clearance under the bridge is less than St. Louis County standard at 14 feet 4 inches. The proposed road crosses under the RR Bridge on a skew and would need to be lowered to maintain the same clearance. An existing 54" sanitary sewer would also need to be relocated from under the existing railroad bridge fill slope.

#### New Union Pacific Railroad Bridge over the SCC

Widening of Hanley Road under the Union Pacific Railroad may require replacement of the bridge if splitting the outside lanes around the piers is unacceptable. Replacement of the bridge would likely require construction of a temporary bypass to allow usage of the rail line during

construction. The rail line is a very active line and the Union Pacific Railroad will not allow the rail line to be out of service for any period of time. Further coordination with the Union Pacific Railroad would need to occur regarding the feasibility of a temporary bypass. Since this option is not being carried forward in this EIS, additional environmental analysis would also likely be required if this option is implemented.

### 3.5.1.2 Laclede Station Road Intersection

The intersection of the South County Connector and Laclede Station Road will serve a large number of vehicles, approximately 5,500 vehicles during the evening peak hour in 2040. Laclede Station Road will continue to be a significant north-south arterial serving western south St. Louis County. A large amount of traffic will turn from Laclede Station Road onto the South County Connector towards Hanley Road to access central St. Louis County. The intersection of Laclede Station Road and the South County Connector will need to accommodate these heavy movements.

The existing Laclede Station Road Bridge over Deer Creek, which is within the potential area of impact, would not be replaced. The South County Connector intersection with Laclede Station Road is about 100 feet from the existing bridge. Modifications to Laclede Station Road and the connection with the South County Connector can be accommodated without impact to the bridge. A few commercial properties and Deer Creek Park are located in proximity to the intersection of Laclede Station Road and the South County Connector. The following intersection types were studied as a means to provide ample capacity and access to the adjacent properties while also considering safety factors.

#### Typical Signalized Intersection

A signalized intersection could be constructed at the intersection of Laclede Station Road and the South County Connector with access to Deer Creek Center via a fourth leg of the intersection as depicted in Figure 3-2. Access to Deer Creek Park and the properties to the west would be close to this signalized intersection and movements could be limited by medians. A heavy northbound Laclede Station Road to northbound Hanley Road movement during the morning peak hour is projected, which could require three left turn lanes on Laclede Station Road. The southbound movement during the evening peak hour would require a free right turn movement from the South County Connector to Laclede Station Road.

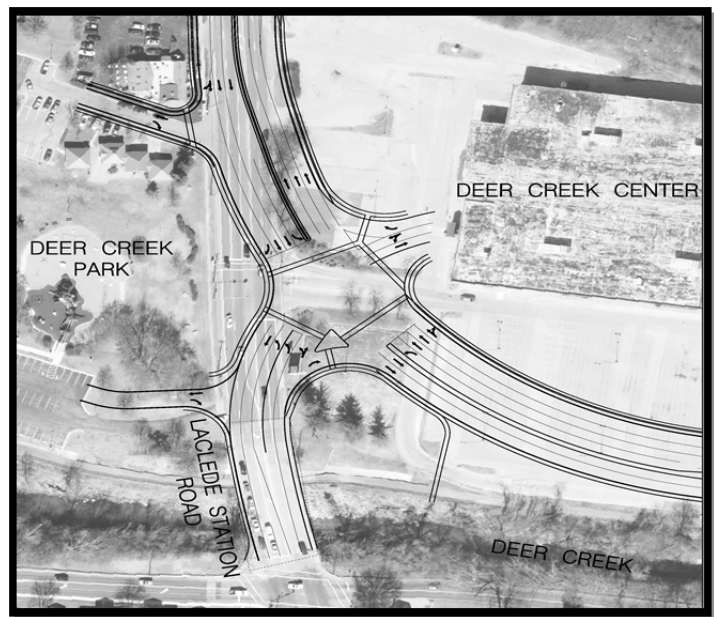


Figure 3-2: Laclede Station Road - Typical Signalized Intersection

The proximity of the Marshall Avenue intersection with Laclede Station Road would require tight coordination between the two signals to minimize queue spill backs into the adjacent intersections.



### Five Leg Intersection

Improved access to Deer Creek Park could be provided by the addition of a fifth leg to the intersection as depicted in Figure 3-3. The addition of this leg would negatively impact the operation of the intersection, but would improve access. The entrance into Deer Creek Center would be moved to the north to align with the northern parking lot for Deer Creek Park. The additional leg to the intersection increases the complexity of the signal phasing and will likely increase the delay drivers experience at the intersection as additional phases are needed to accommodate all of the movements at the intersection.

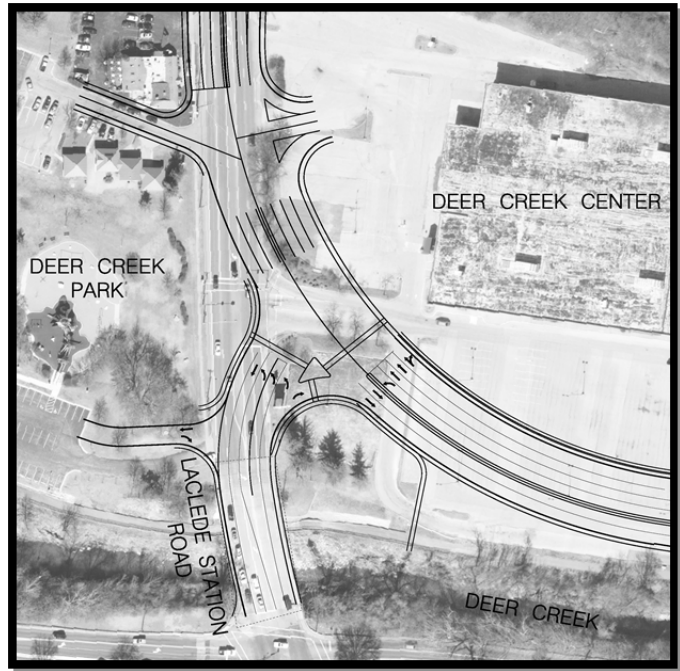


Figure 3-3: Laclede Station Road - Five Leg Intersection

### Median U-Turn Intersections (MUTI)

This option would provide Median U-Turns along the South County Connector and could provide additional access points to Deer Creek Center and access to Deer Creek Park as depicted in Figure 3-4. The use of a Median U-Turn configuration would require more right-of-way than other intersection options. The use of a Median U-Turn Intersection would be common within the South County Connector corridor, as this configuration is under consideration for the intersection of the South County Connector and Big Bend Boulevard. A Median U-Turn intersection is also the planned improvement at the Hanley Road and Manchester Road intersection just past the northern terminus of the study.



Figure 3-4: Median U-Turn Intersections

### 3.5.1.3 Through Deer Creek Center

The initial and secondary screening of alternatives resulted in an alignment that would extend through the underutilized Deer Creek Center. A large portion of Deer Creek Center is located within the Deer Creek floodplain and floodway. Therefore, any of the refined Build Alternatives have unavoidable encroachments into the Deer Creek floodplain and floodway.

St. Louis County's design criteria states: *"Roadway shoulders shall be set a minimum of 2 feet above the 100 year elevation"* and *"When any portion of the flood plain is filled, an equal volume below the flood plain elevation must be excavated to provide for equivalent storage in the flood plain area."*<sup>14</sup> Further, any construction in the floodway cannot cause a rise in the 100-year flood elevation that is established by FEMA. The lower portion of the parking lot, which is near Deer Creek, floods at the 5-year event. The parking lot rises in elevation as you move towards the existing buildings. The South County Connector would need to be designed at an elevation below the 100-year base flood elevation in order to obtain a "No Rise" certificate and to preserve the amount of floodplain storage along Deer Creek.

Raising the roadway to a minimum of 2 feet above the 100-year flood elevation to meet St. Louis County's design criteria, while also providing sufficient flood storage, would not be feasible without building the roadway on structure through Deer Creek Center. An alternate approach is to design the roadway as high as possible without raising the base flood elevation. Using this approach, the preliminary design for the South County Connector through Deer Creek Center would include excavating an area on the south side of South County Connector between the proposed road and Deer Creek. This excavated area, or "bench," would offset the fill used to raise the roadbed above the parking lot. The preliminary hydraulic modeling performed for this stretch of Deer Creek indicated that the new roadway can be elevated to the 10-year flood elevation without raising the base flood elevation. While this option may be less than optimal, the South County Connector would align well with the other bridges and roadways in the area. For example, the Laclede Station Road Bridge over Deer Creek is theoretically topped by the 10-year flood. Deer Creek is also known to be a "flashy creek" and typical high waters recede quickly; therefore, any overtopping of the roadway during flood events would likely be for a short duration.

### 3.5.1.4 Big Bend Boulevard Intersection

Several potential configurations were studied for the intersection of the South County Connector and Big Bend Boulevard. Big Bend Boulevard is projected to carry high traffic volumes north of the South County Connector. The South County Connector would cross Big Bend Boulevard between Deer Creek and the MetroLink tracks. This location is close to the existing signalized intersection with Big Bend Boulevard and Oxford, and is fairly close to the Shrewsbury Avenue/Key West Avenue intersection. The high volumes and proximity to adjacent intersections require careful analysis of this intersection. The following intersection configurations were studied.

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<sup>14</sup> St. Louis County Design Criteria for the Preparation of Improvement Plans;  
[http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Design\\_Criteria/sec50\\_40.pdf](http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Design_Criteria/sec50_40.pdf)

### Traditional Intersection with Signals

A traditional intersection with multiple turn lanes was analyzed for the intersection of Big Bend Boulevard and South County Connector as depicted in Figure 3-5. This intersection included dual left-turn lanes on both legs of Big Bend Boulevard and dual right-turn lanes on northbound South County Connector. All other legs have single left or right-turn lanes.

The number of through and turn lanes create wide approaches to the intersection, especially along Big Bend Boulevard. Big Bend would require seven lanes on either side of the South County Connector. Existing constraints on either side of the South County Connector make the creation of these additional turn lanes difficult. To the north, Big Bend goes under the MetroLink tracks at a location where only four lanes can be accommodated. To the south, the existing bridge over Deer Creek is only five lanes wide.

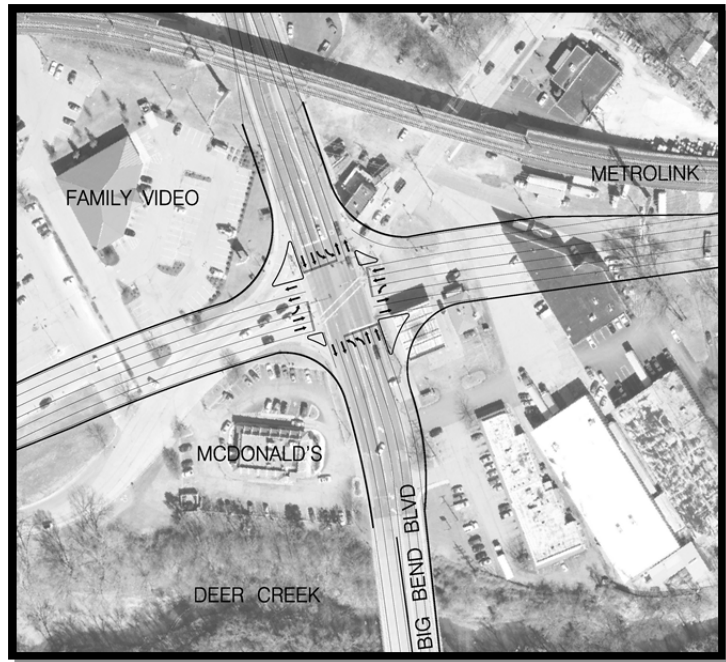


Figure 3-5: Big Bend Boulevard Intersection - Traditional Intersection with Signals

### Median U-Turn Intersection

Due to the high number of left-turns from northbound and southbound Big Bend Boulevard onto the South County Connector, an alternative intersection type was examined as depicted in Figure 3-6. A Median U-Turn Intersection (MUTI), similar to the one proposed at Hanley and Manchester Roads, was studied for this intersection. The location of the intersection is about the same as the traditional intersection.

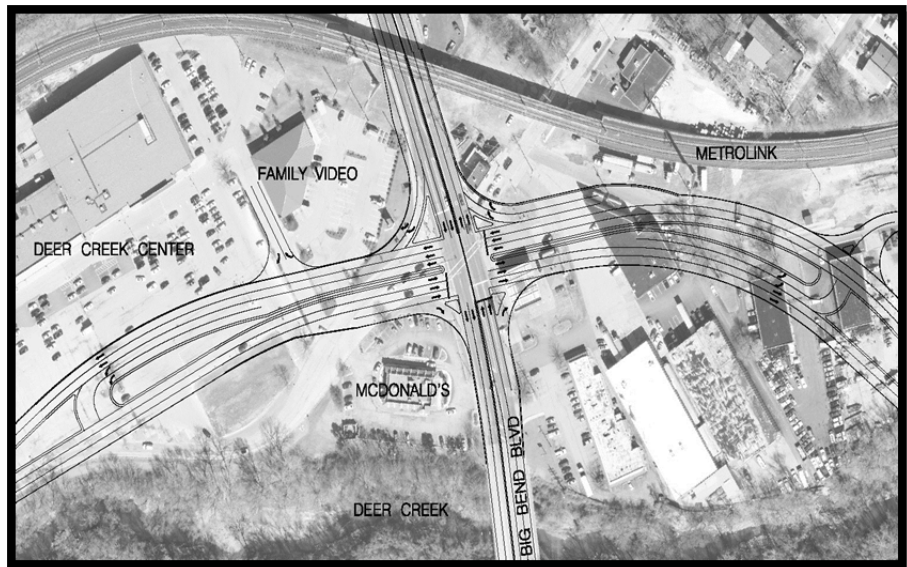


Figure 3-6: Big Bend Boulevard Intersection – Median U-Turn Intersection

However, with the MUTI, a series of three signalized intersections replaces the intersection at South County Connector and Big Bend Boulevard, eliminating the need for the added turn lanes. The total travel delay for the three signalized intersections is lower than the average travel delay experienced at a traditional single signalized intersection. The presence of the additional signalized intersections does pose access issues that would not be present with a traditional intersection.

### Quadrant Roadway Intersections

To remove the turning traffic from the intersection of the South County Connector and Big Bend Boulevard, quadrant roadway intersections (QRI) were also studied. A quadrant roadway intersection is an intersection design that changes how left turns are made by using a connecting roadway to provide this connection. With a quadrant roadway intersection, some or all left turn movements are not made at the main intersection. These left turning vehicles will travel further, but the left turn movements are removed from the main intersection. Several QRI configurations were explored including one-sided and two-sided designs.

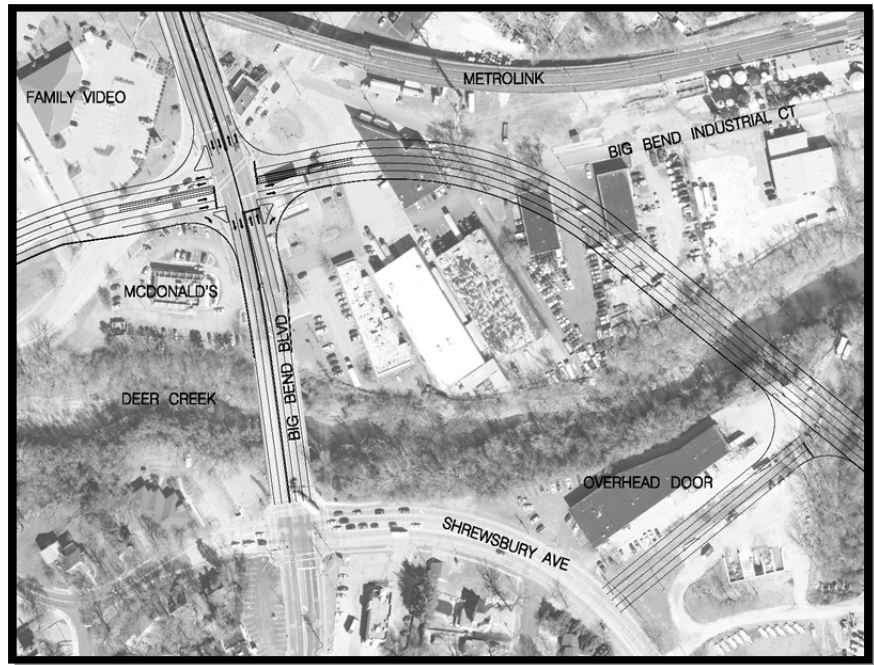


Figure 3-7: Big Bend Boulevard Intersection – Quadrant Roadway Intersection

A one-sided QRI would include a separate connecting roadway between the South County Connector and Shrewsbury Avenue, as depicted in Figure 3-7. This connector would allow for the left turning movements at Big Bend Boulevard to be made at the Shrewsbury and Big Bend Boulevard intersection, where overall traffic volumes are much lower. A one-sided QRI eliminates the left turning phase from the Big Bend Boulevard and South County Connector intersection, by relocating those turns to the new Shrewsbury Connector roadway.

A two-sided QRI would help separate these turning movements and allow for many of the movements to be made as right-turns from the South County Connector. Unfortunately, there does not appear to be adequate space between the Deer Creek and the MetroLink Bridge to get a turning roadway for the second leg of the quadrant roadway intersection.

### Close Shrewsbury

Closing Shrewsbury Avenue was examined due to its impact on the proposed intersection of the South County Connector with Big Bend Boulevard. Turning Shrewsbury Avenue east to connect with the South County Connector as compared with its current location of connecting with Big Bend was evaluated as depicted in Figure 3-8. The closure of Shrewsbury Avenue at Big Bend Boulevard was analyzed independent of the intersection type at Big Bend Boulevard and the South County Connector.

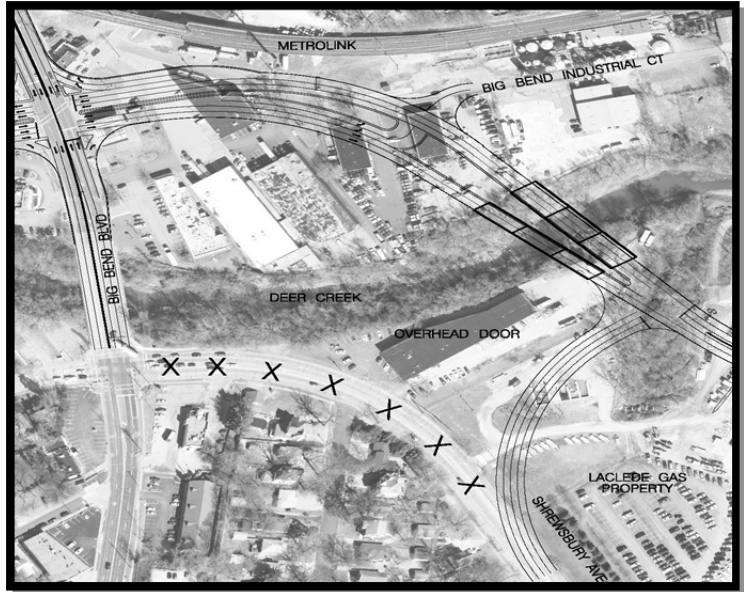


Figure 3-8: Big Bend Boulevard Intersection – Close Shrewsbury

This option would have the intersection of Big Bend and Key West/Marshall Road converted to a three leg intersection, with no connection to Shrewsbury Avenue. The realignment of Shrewsbury Avenue would require the acquisition of more right-of-way and further impact the Laclede Gas property.

Options for a grade separated intersection at Big Bend Boulevard were also considered. However, a small interchange-style intersection would not fit within the constraints of the Deer Creek Bridge and the MetroLink overpass of Big Bend Boulevard.

## **3.5.2 Central Section**

This section begins east of the proposed Big Bend Boulevard Intersection and includes a new interchange at Interstate 44. As discussed previously in this chapter, there are two general alignments that could make the connection from the Big Bend Boulevard intersection to the Interstate 44 interchange. This section presents these two alignment options south of the Big Bend Boulevard intersection and the Interchange options.

### **3.5.2.1 Laclede Gas Property**

This alignment would continue south of the Big Bend Boulevard intersection, cross Deer Creek just east of Big Bend Boulevard, and extend through the Laclede Gas property as depicted in Figure 3-9. Early coordination with Laclede Gas provided input for establishing an alignment that would minimize impact on the function of the facility. Keeping the roadway elevated on structure as long as possible would allow Laclede Gas to maintain efficient operation of their facility. An alignment that goes through the Laclede Gas property will require significant coordination with the U.S. Environmental Protection Agency due to the presence of a previous Superfund Site

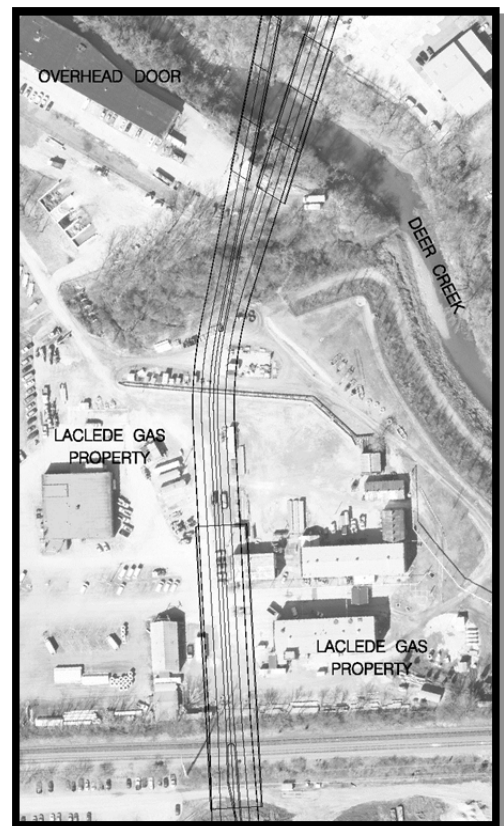


Figure 3-9: Laclede Gas Property

that has certain deed restrictions on the property. This alternative is also in proximity of jurisdictional waters of the U.S. However, it is anticipated that this resource would be avoided since the alignment would be on structure through this section of the alignment.

### 3.5.2.2 Big Bend Industrial Court

The second alignment through the Central Section would extend east from the proposed Big Bend Boulevard intersection through the Big Bend Industrial Court, crossing Deer Creek just north of the BNSF Railroad, and would avoid most of the Laclede Gas property as depicted in Figure 3-10.

An alignment that goes through the Big Bend Industrial Court would likely impact all of the businesses located along this street. Even though impacts to the Laclede Gas property would be minimized, complete avoidance would not be feasible. The portion of the Laclede Gas property that would be impacted is located within the deed restricted area associated with the Superfund site. Further, this alignment would impact the Mississippi River Gas Line Pressure Reducing Station.

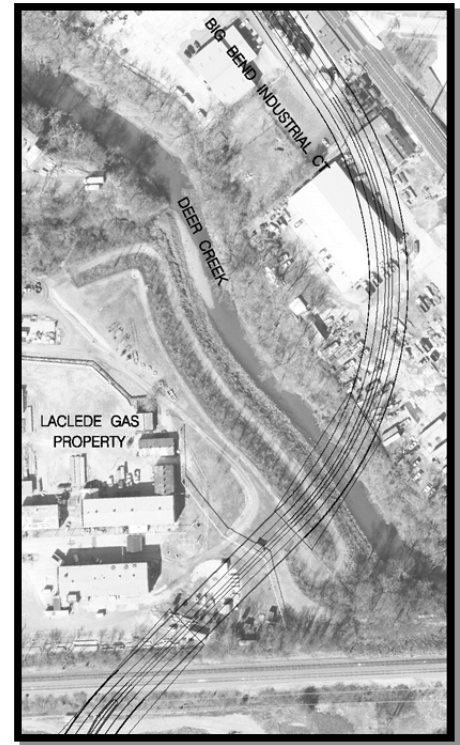


Figure 3-10: Big Bend Industrial Court

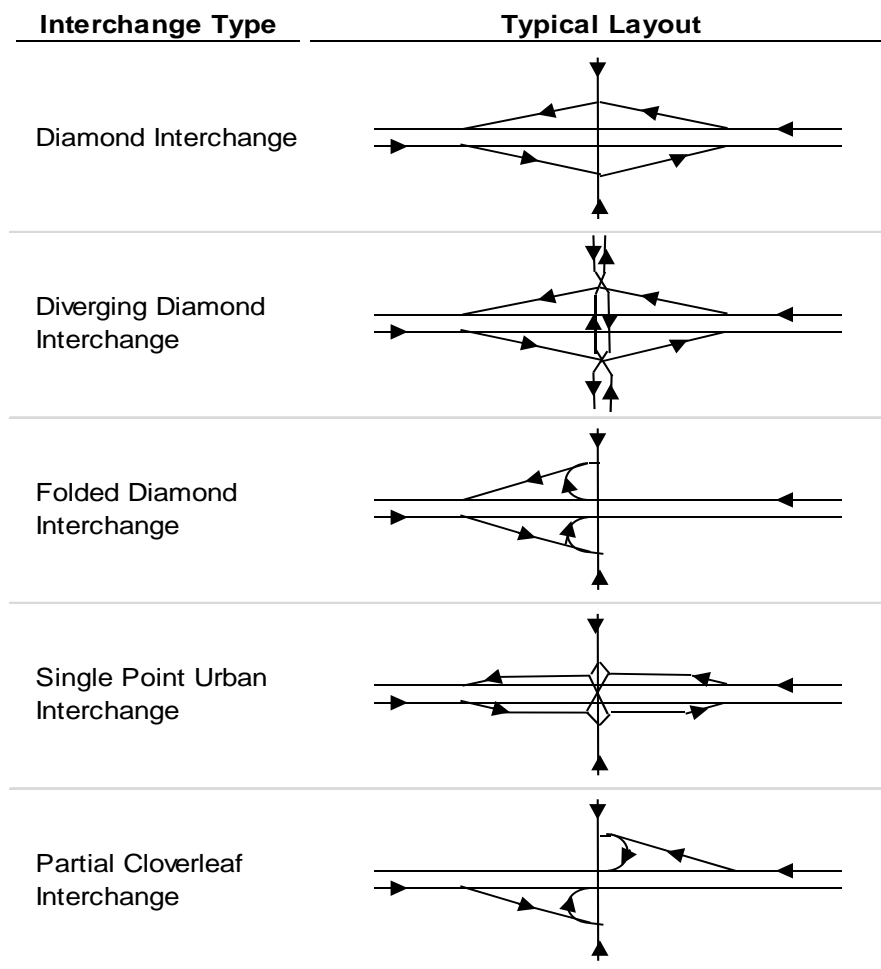
### 3.5.3 Interstate 44 Interchange Configuration

Through the alternative development process, multiple configurations were studied for the interchange of the South County Connector at Interstate 44. The inclusion of a full interchange with Interstate 44 is consistent with the purpose and need for the project, addressing the need for improved connectivity. A full interchange with Interstate 44 would fill a five-mile gap between Elm Avenue and Hampton Avenue where there are no full interchanges. Currently, there are only partial interchanges along this stretch of Interstate 44.

Interchange locations for the revised study area were examined between the MetroLink Bridge over Interstate 44 and the Carr Lane Industries buildings. The location where the South County Connector crosses Interstate 44 is dependent upon the interchange type and providing satisfactory grades on the ramps to address adequate clearance under the existing MetroLink Bridge. The location of the new interchange is complicated by the existing Burlington Northern Santa Fe (BNSF) Railroad lines and the Interstate 44 Bridge over these rail lines. Interstate 44 is elevated above the railroad, resulting in the South County Connector needing to be elevated higher than would be typical. The proposed bridges related to the South County Connector and new ramps over the BNSF Railroad lines could be designed such that the vertical and horizontal clearances provided are larger than what currently exists at the Interstate 44 Bridge. These clearances may not fully meet the BNSF requirements, but would be greater than the existing conditions and would allow for construction of a second track in the future.

Based upon the constraints at the Interstate 44 crossing for the preferred corridor, little flexibility exists for the location of the interchange. The interchange analysis focused on the interchange types that would fit within the constraints at the selected crossing location. Figure 3-11 presents the typical layouts for interchanges from which several of the alternates were derived.



**Figure 3-11: Interchange Types**

Source: AASHTO: A Policy on Geometric Design of Highways and Streets, 2011.

Interchange configurations were initially screened based on engineering feasibility. If an interchange type was deemed not feasible (i.e. could not be constructed to a reasonable standard), it was not carried further for additional analysis. Interchange types that included loop ramps for one or more of the four movements were eliminated from consideration. Issues that resulted when considering loop ramps include significant right-of-way requirements, railroad constraints, and inadequate room available to provide a satisfactory grade on the ramp.

The three interchange types carried forward include Single Point Urban Interchange (SPUI), Tight Urban Diamond Interchange (TUDI), and Diverging Diamond Interchange (DDI). The operational analysis of each of these interchange types is presented in the following sections.

### 3.5.3.1 Single Point Urban Interchange

The SPUI configuration, as depicted in Figure 3-12, is situated at a location where adequate ramp lengths exist to have acceptable vertical clearance under the MetroLink Bridge and clearance over the BNSF Railroad. The geometric layout of the ramps avoids the Carr Lane Industries buildings, with the construction of retaining walls.

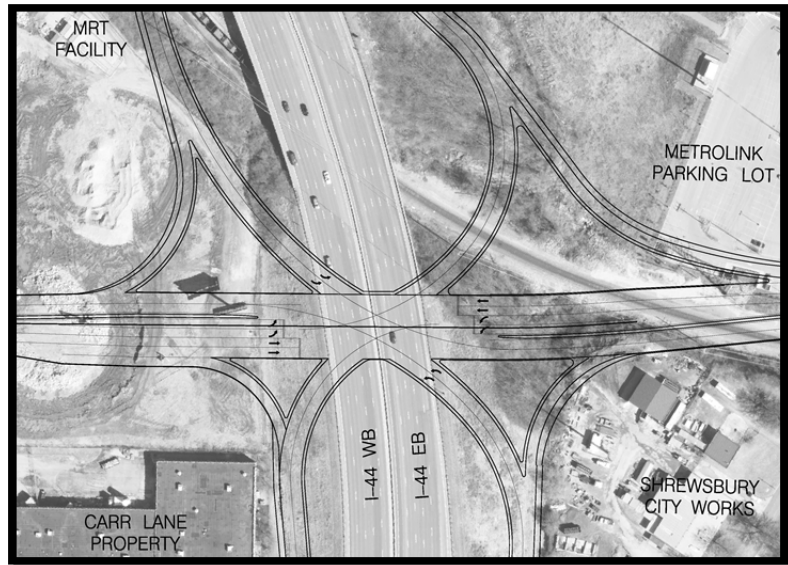


Figure 3-12: Interstate 44 – Single Point Urban Interchange

### 3.5.3.2 Tight Urban Diamond Interchange

The geometric layout of the TUDI, as depicted in Figure 3-13, is constrained by several obstacles. These obstacles include the Carr Lane Industries buildings, the BNSF Railroad and the curve in Interstate 44 at the interchange location. The ramps for a tight diamond interchange do not swing out as much as the single point interchange option, which makes the vertical grades on the ramps more challenging. Additionally, the tighter alignment of the ramps on the north side of Interstate 44 is complicated by the curve in Interstate 44, The BNSF Railroad, and the necessity of the ramp to bridge over the railroad.

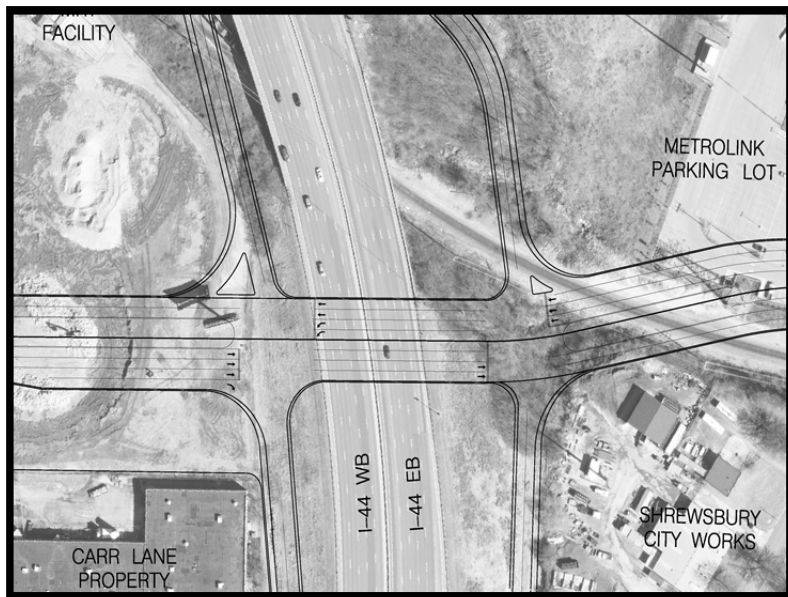


Figure 3-13: Interstate 44 – Tight Diamond Interchange

### 3.5.3.3 Diverging Diamond Interchange

A DDI, as depicted in Figure 3-14 is essentially a compressed diamond interchange where left-turning conflicts are eliminated by directing drivers to drive on the “opposite” side of the road. This requires an additional two-phase signal to handle the crossing traffic. Due to the constraints of placing the intersection, the DDI had a much larger footprint than the SPUI and TUDI interchanges and would significantly impact the MetroLink parking lot. The location of the BNSF Railroad in relationship to the DDI location would make the structure over Interstate 44 very complicated in regards to the placement of columns for the bridge.

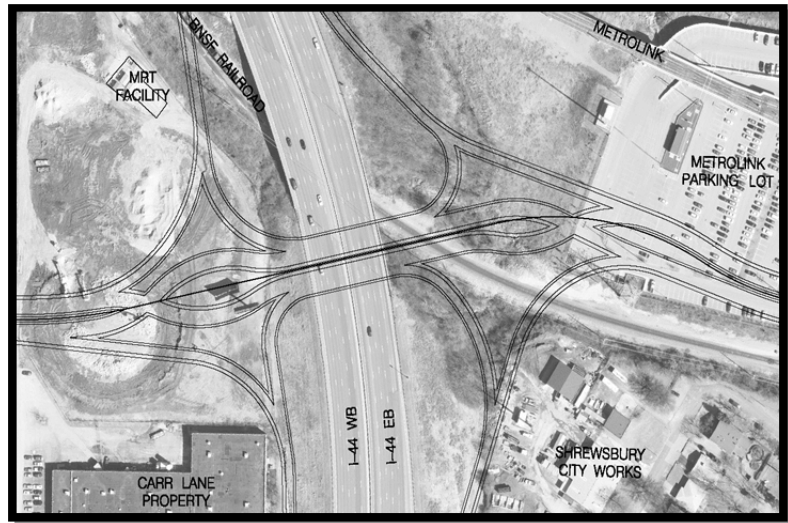


Figure 3-14: Interstate 44 – Diverging Diamond Interchange

### 3.5.4 Southern Section/Southern Terminus

The southern section begins south of Interstate 44 at the Shrewsbury MetroLink Station and extends to the southern project limits just south of Watson Road. This section presents options for the proposed Lansdowne Avenue intersection and for the Watson Road corridor between Mackenzie Road and River Des Peres Boulevard.

#### 3.5.4.1 Lansdowne Avenue Intersection

The intersection of the South County Connector/River Des Peres Boulevard with Lansdowne Avenue was analyzed with three alternates. The first alternate would replace the existing right-in/right-out access to the MetroLink parking lot with a signalized intersection between Lansdowne Avenue and the proposed South County Connector. The second alternate would require the South County Connector to span over Lansdowne Avenue and connect to Lansdowne Avenue by a QRI at the existing intersection with River Des Peres Boulevard/ MetroLink Entrance. A third alternative would create a three legged T-intersection with the South County Connector and Lansdowne Avenue.

#### At Grade

Signalized intersections should be spaced a minimum of 660 feet on collector roads such as

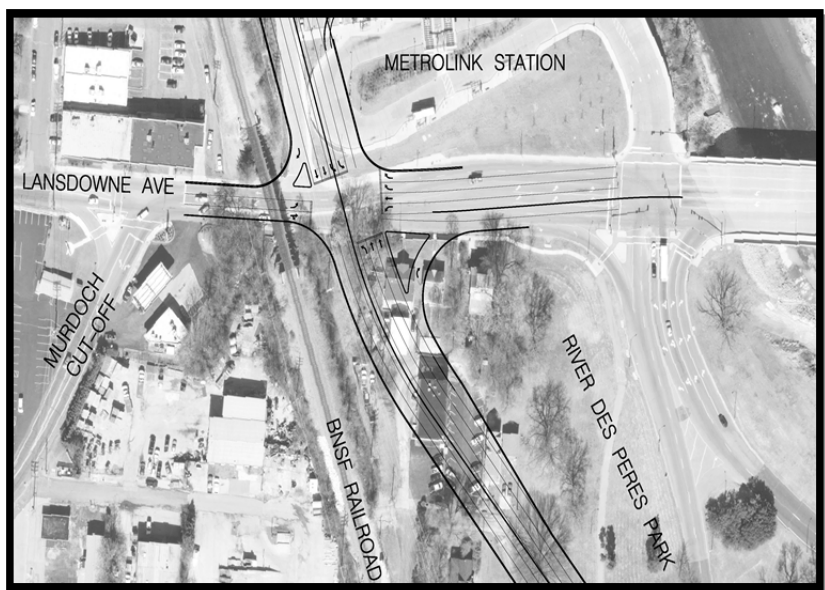


Figure 3-15: Lansdowne Avenue Intersection – At Grade

Lansdowne Avenue.<sup>15</sup> Intersecting the South County Connector with Lansdowne Avenue using an at-grade intersection, as depicted in Figure 3-15, would create three signalized intersections within 700 feet along Lansdowne Avenue. The other signalized intersections include the entrance into the MetroLink parking lot and the intersection with Murdoch Cut-Off. The proximity of these signals would pose operational difficulties as queues from the signalized intersections could frequently spill back into one of the adjacent signalized intersections.

Additional complications could arise from the adjacent railroad bridge that carries the BNSF Railroad over Lansdowne Avenue between the South County Connector and Murdoch Cut-Off. The presence of this bridge limits the width of Lansdowne Avenue west of the South County Connector intersection.

### Connector Roadway Intersection

This alternative includes a new structure on the South County Connector over Lansdowne Avenue. The existing northbound and southbound one-way traffic lanes on River Des Peres Boulevard would be co-located to tie into the proposed South County Connector. A connection to Lansdowne Avenue would be provided by an extension of the MetroLink entrance to a new intersection south of Lansdowne Avenue as depicted in Figure 3-16. This option would add an additional structure to the project, but would allow for better operational performance than the at-grade intersection alternative. This option would have a higher construction cost than the at-grade alternate as a result of the additional structure.

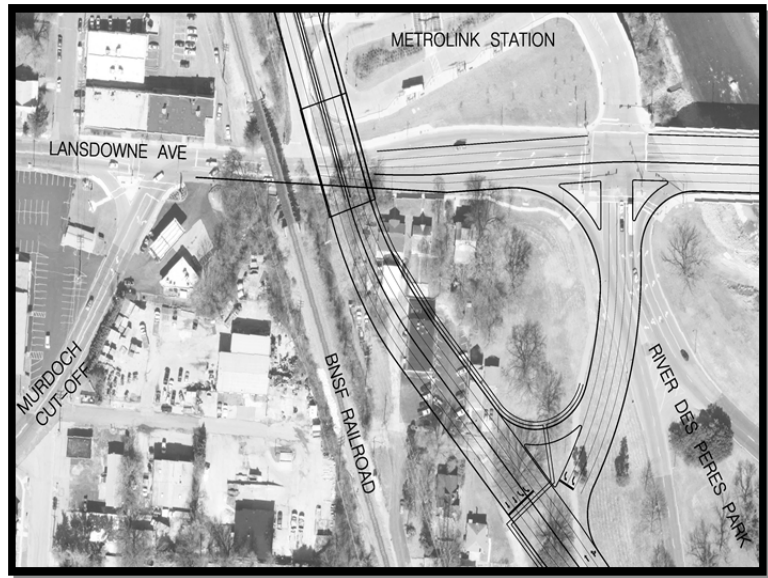


Figure 3-16: Lansdowne Avenue – Connector Roadway Intersection

### T-Intersection at Lansdowne Avenue

An option was considered that would terminate the South County Connector at Lansdowne Avenue to minimize direct impacts to River Des Peres Park. Access to River Des Peres Boulevard would require a connection be made along Lansdowne Avenue as depicted in Figure 3-17. Similar concerns exist

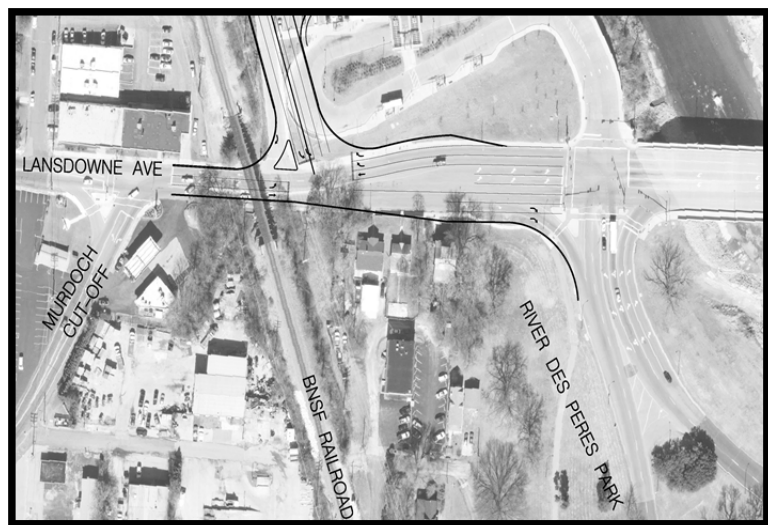


Figure 3-17: Lansdowne Avenue – T-Intersection

<sup>15</sup> St. Louis County Access Management Guidelines, St. Louis County, June 2008.  
[http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Publications/access\\_management\\_guidelines\\_06-2008.pdf](http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Publications/access_management_guidelines_06-2008.pdf)

with this option as with the at-grade intersection, specifically the proximity of three signalized intersections and constraints for the existing railroad bridge.

#### 3.5.4.2 Watson Road Corridor

The Watson Road corridor between Mackenzie Road and River Des Peres Boulevard is an important corridor to the operations of South County Connector. Mackenzie Road serves as a second arterial that feeds traffic to the South County Connector. The existing intersection between River Des Peres Boulevard and Watson Road is a compressed cloverleaf interchange. The interchange has ramps that operate at less than 20 miles per hour. An efficient connection between Mackenzie Road and South County Connector is needed to gain as much benefit from the South County Connector as possible.

##### No Build

The Watson Road and River Des Peres Boulevard interchange is expected to have a Level of Service (LOS) F in 2040 without the South County Connector. Delays for two movements within the interchange are expected to reach LOS F: the movements from eastbound Watson Road turning onto northbound River Des Peres Boulevard and from southbound River Des Peres Boulevard turning onto westbound Watson Road.

With the addition of the South County Connector the intersection of Weil and the Watson Road/River Des Peres Boulevard connector becomes LOS F in 2040. The following build alternatives were investigated to identify options that could alleviate the congestion at the Watson Road and River Des Peres Boulevard interchange.

##### Free Right Turns and Weil Roundabout

The first build alternative improves the delays experienced by the southbound River Des Peres Boulevard to westbound Watson and eastbound Watson to northbound River Des Peres Boulevard movements by creating free right-turns, rather than yielding to the conflicting through movement. This is accomplished on Watson Road by converting one of the three westbound through lanes to a continuous right-turn only lane. The lane would be added back to Watson Road downstream of the intersection. On River Des Peres Boulevard, the free right-turn lane is added by constructing a third lane on northbound River Des Peres Boulevard within the interchange area. This would require widening of the bridge over Watson Road.

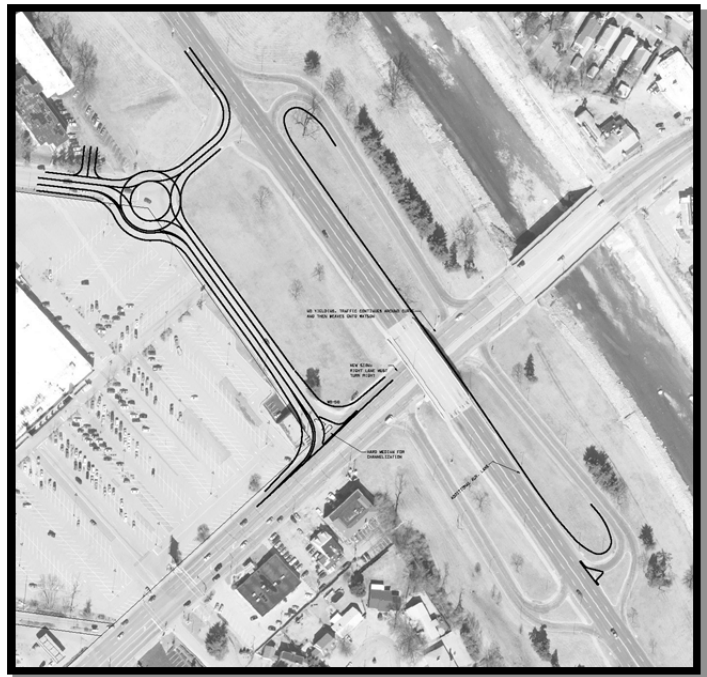


Figure 3-18: Watson Road – Free Right Turns and Weil Roundabout

Additionally, a single lane roundabout is proposed at the intersection of Weil with the Watson Road/River Des Peres Boulevard connector to increase operational efficiency. To achieve an acceptable LOS, a right-turn bypass lane is added on the eastbound Weil approach. This results

in two southbound lanes that are carried to the Watson Road intersection. This alternative is depicted in Figure 3-18.

*Tight Diamond Interchange at River Des Peres Boulevard*

Signalizing the intersections on Watson Road within the River Des Peres Boulevard interchange ramps would convert the interchange to a tight diamond configuration as depicted in Figure 3-19. Removing the raised median on Watson Road would allow six lanes of traffic under the River Des Peres Boulevard Bridge, providing two through lanes and a left-turn lane in each direction. The connection of the ramps to River Des Peres Boulevard would be reconfigured to include acceleration and deceleration lanes to increase the function of the interchange.

With the conversion of the interchange to a tight diamond interchange with one-way ramps, Weil Avenue would be relocated to the west, away from the interchange. The intersection with Watson Road would be limited to a right-in/right-out intersection.

*Free Southbound Right Turn and Signalized Eastbound Left Turn*

The final alternate, as depicted in Figure 3-20, is a combination of the two previous alternates. This alternative keeps the roundabout and free right-turn from the first alternate. The widening of River Des Peres Boulevard within the interchange (including the bridge over Watson) is moved to the north by converting the eastbound Watson Road to northbound River Des Peres Boulevard movement from a right turn to a left turn. This left-turn would occur at a signalized intersection due to the large number of left-turning vehicles. All other movements at the interchange would remain unchanged. The widening of the River Des Peres Boulevard Bridge is not required for this option and the impact to River Des Peres Park is similar to that of the Free Right Turns and Weil Roundabout alternate.



Figure 3-19: Watson Road – Tight Diamond Interchange at River Des Peres Boulevard



Figure 3-20: Watson Road – Free Southbound Right Turn and Signalized Eastbound Left Turn



### 3.5.5 Intersection and Interchange Traffic Impacts

An analysis of the level of service (LOS) for the intersections and interchanges along the South County Connector corridor for the morning and evening peak hours was conducted for the alternates considered. The delay and LOS estimates were produced using the Synchro macroscopic traffic analysis software program.

The delays and LOS for the No Build scenario were presented previously in Table 3-7 in Section 3.4, Traffic Demand Studies. The results of the No Build analysis predict that congestion will continue on the Laclede Station Road corridor. The same section presents the LOS for the intersections outside of the South County Connector for the build scenarios. The changes in LOS at these intersections reflects the diversion of traffic to the South County Connector and are relatively independent of the build alternative chosen, assuming the alternative has ample capacity to accommodate the anticipated traffic demands.

The same methodology and analysis techniques were used to estimate the operational performance of the South County Connector under the different build scenarios. Table 3-8 through Table 3-13 present the results of the traffic analysis of the alternatives considered in Section 3.5, Refinement of Reasonable Alternatives. The delays shown are based on optimized signal timings.

**Table 3-8: Laclede Station Road Intersection Options – 2040 Peak Hour Analysis**

Laclede Station Road Intersection	Traditional Intersection		Five Leg		Median U-Turn	
	AM	PM	AM	PM	AM	PM
SCC & Laclede Station Road	25.6 (C)	50.5 (D)	25.0 (C)	72.5 (F)		
SCC & West U-Turn					12.3 (B)	18.9 (B)
SCC & East U-Turn					36.9 (D)	19.0 (A)
Laclede Sta. Rd & Marshall Ave.	20.0 (C)	54.4 (D)	13.8 (B)	59.5 (E)	21.4 (C)	33.5 (C)

Source: CMT Analysis, 2012

The intersection of Laclede Station Road and South County Connector operates efficiently as either a traditional intersection or as a continuation of the Median U-Turn facility at Big Bend Boulevard. The traffic impacts summarized will likely vary to some degree as a result of the actual redevelopment type and size of Deer Creek Center.

**Table 3-9: Big Bend Boulevard Intersection Options – 2040 Peak Hour Analysis**

Big Bend Blvd Intersection	Traditional Intersection		Median U-Turn		QRI	
	AM	PM	AM	PM	AM	PM
SCC & Big Bend Blvd.	65.1 (E)	49.7 (D)	22.7 (C)	22.7 (C)		
SCC & West U-Turn			5.3 (A)	16.7 (B)		
SCC & East U-Turn			6.6 (A)	6.0 (A)		
SCC & Jug Handle					126.0 (F)	64.1 (E)
Big Bend & Shrewsbury	22.4 (C)	17.9 (B)	19.0 (B)	14.5 (B)	81.3 (F)	99.7 (F)

Source: CMT Analysis, 2012

The intersection of Big Bend Boulevard and the South County Connector operates most efficiently as a Median U-Turn Intersection, although a traditional intersection may prove to be an acceptable intersection type. The QRI is not a reasonable alternative due to the cost and poor operations.

**Table 3-10: Big Bend Boulevard Intersection with Shrewsbury Closed – 2040 Peak Hour Analysis**

Big Bend Blvd with Shrewsbury closed	Traditional Intersection		Median U-Turn	
	AM	PM	AM	PM
SCC & Big Bend Blvd.	53.3 (D)	93.2 (F)	24.8 (C)	52.9 (D)
SCC & West U-Turn			4.8 (A)	33.0 (C)
SCC & East U-Turn			10.0 (B)	11.4 (B)
SCC & Shrewsbury	13.9 (B)	21.7 (C)	25.6 (C)	57.1 (E)
Big Bend & Key West	10.8 (B)	26.1 (C)	8.1 (A)	15.8 (B)

Source: CMT Analysis, 2012

The operational impacts of closing the Shrewsbury Avenue connection to Big Bend Boulevard has a negative impact on the operations of the Big Bend Boulevard intersection with the South County Connector. The additional turning movements at the Big Bend Boulevard and South County Connector intersection to access Shrewsbury causes additional delays at the intersection.

**Table 3-11: Interchange Type Options – 2040 Peak Hour Analysis**

Interchange Type	SCC & I-44 WB		SCC & I-44 EB	
	Ramps		Ramps	
	AM	PM	AM	PM
Single Point Interchange			37.5 (D)	39.9 (D)
Tight Diamond Interchange	39.8 (D)	28.1 (C)		
Diverging Diamond Interchange	25.6 (C)	21.1 (C)	22.6 (C)	32.9 (C)
			23.6 (C)	22.7 (C)

Source: CMT Analysis, 2012

The operational analysis of the Interstate 44 interchange types shows that multiple interchange configurations can produce acceptable LOS. The ultimate interchange type will likely be selected based upon cost and right-of-way impact considerations.

**Table 3-12: Lansdowne Avenue Intersection Options – 2040 Peak Hour Analysis**

Lansdowne Intersection	At-Grade Intersection		QRI		T-Intersection	
	AM	PM	AM	PM	AM	PM
Lansdowne & Murdoch Cutoff	14.8 (B)	6.9 (A)	5.1 (A)	5.7 (A)	14.8 (B)	6.9 (A)
Lansdowne & SCC / River Des Peres Blvd	63.6 (E)	108.9 (F)			42.5 (D)	81.5 (F)
SCC & Lansdowne Connector			37.8 (D)	41.1 (D)		
Lansdowne & MetroLink Entrance	9.6 (A)	14.6 (B)	20.1 (C)	24.1 (C)	81.5 (F)	188.0 (F)

Source: CMT Analysis, 2012

Of the alternates considered for the intersection of the South County Connector and Lansdowne Avenue, the QRI connection is the only alternate to operate at an acceptable LOS. The proximity of existing intersections and the traffic volumes along Lansdowne Avenue and at the Shrewsbury MetroLink Station do not allow other alternates to operate effectively.

**Table 3-13: Watson Road Corridor Options – 2040 Peak Hour Analysis**

<u>Watson Road Corridor/ RDPB Options</u>	<u>No Build</u>		<u>Free Right &amp; Roundabout</u>		<u>Tight Diamond</u>		<u>Free Right &amp; Signalized EB LT</u>	
	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>
RDPB & WB Watson Connector	44.9 (E)	29.0 (D)	37.4 (E)	27.1 (D)	NA	NA	11.7 (B)	14.8 (B)
RDPB & EB Watson Connector	715.2 (F)	239.9 (F)	11.9 (B)	16.4 (C)	NA	NA	11.9 (B)	16.4 (C)
Weil & Waston-RDPB Connector	27.3 (D)	111.4 (F)	12.6 (B)	19.3 (C)	NA	NA	12.6 (B)	19.3 (C)
Watson & Weil	77.8 (F)	411.6 (F)	11.0 (B)	10.2 (B)	25.3 (C)	27.8 (C)	11.0 (B)	10.2 (B)
Watson & NB RDPB Connector	10.7 (B)	11.3 (B)	10.7 (B)	11.3 (B)	41.1 (D)	36.4 (D)	9.6 (A)	21.3 (C)
Watson & Mackenzie	19.0 (B)	35.0 (C)	19.0 (B)	35.0 (C)	26.0 (C)	31.8 (C)	18.1 (B)	33.2 (C)

Source: CMT Analysis, 2012

The interchange of River Des Peres Boulevard and Watson Road currently experiences excessive delays and queues during the peak hours. Future traffic projections show that without the South County Connector project this interchange will continue to operate at an unacceptable LOS. Various improvement alternates considered would greatly improve traffic operations for the projected traffic volumes. These improvements would be needed independent of the construction of the South County Connector.

### 3.6 DEFINITION OF BUILD ALTERNATIVES

The Build Alternatives presented in this EIS are intended to represent a “worst-case” yet reasonable scenario for likely impacts of the project, offering a footprint within which any number of reasonable options might be proposed. The alternatives offered in the EIS do not limit the specific design features that may be included in a preferred alternative. For example, the specific layout of the Interstate 44 and South County Connector interchange would be determined during the design process. The intersection types at Big Bend Boulevard or Laclede Station Road might also differ from the layouts examined in this EIS. However, the footprint used within the EIS for environmental analysis is expected to accommodate the alternatives that the designers may propose.

Reasonable proposals from the designer will be examined to insure that their impacts have been considered and also to confirm their ability to meet the purpose and need of the project in a safe and effective manner. Public involvement about the chosen alternative(s) and its specific details is expected as the design process progresses.

The reasonable Build Alternatives being carried forward into detailed analysis are comprised of a combination of different sub-corridors that were described in the previous sections. The sub-corridors include the Hanley Road Connection/Union Pacific Railroad Crossing, Laclede Station

Road Intersection, Deer Creek Center, Big Bend Boulevard Intersection, Central Section, Interstate 44 Interchange Configuration, Lansdowne Avenue Intersection, and Watson Road Corridor. Following is a description of the alternatives to be carried forward for each particular sub-corridor.

### **3.6.1 Hanley Road Connection/Union Pacific Railroad Crossing**

Splitting of the outside lanes around the existing railroad bridge appears to be the most advantageous alternative. Further investigation will be needed as the design progresses to ensure this option is the most appropriate.

Replacement of the Union Pacific Railroad Bridge would only be considered if reusing the bridge in place is not feasible. Further environmental analysis would be required to assess this option if splitting the outside lanes around the existing railroad bridge is determined not feasible.

### **3.6.2 Laclede Station Road Intersection**

A footprint has been identified that could accommodate each of the studied intersection types considered for the South County Connector and Laclede Station Road intersection. Additional intersection types that provide adequate LOS could be considered as the design is refined.

### **3.6.3 Deer Creek Center**

The proposed alignment would extend through the southern portion of Deer Creek Center adjacent to Deer Creek. To minimize floodplain and floodway impacts, the proposed roadway would be constructed as high as possible without raising the base flood elevation. As previously discussed, a “bench” area would be constructed between the South County Connector and Deer Creek to provide sufficient floodplain storage.

### **3.6.4 Big Bend Boulevard Intersection**

Of the studied intersection configurations, the Median U-Turn intersection provides the best operational performance. This option fits within the project constraints imposed by the existing bridge over Deer Creek and the existing MetroLink Bridge over Big Bend Boulevard. The Median U-Turn intersections will require more access control, effectively regulating the type of developments that can be built along the South County Connector near the intersection.

### **3.6.5 Central Section**

Through discussions with Laclede Gas, a route was chosen that minimizes impacts on their operations. This route is essentially through the center of the Laclede Gas property and crosses Deer Creek approximately half-way from Shrewsbury Avenue to the BNSF Railroad. A route that extends through the Big Bend Industrial Court area is also being carried forward for detailed analysis.

### **3.6.6 Interstate 44 Interchange Configuration**

A full interchange at Interstate 44 is recommended as a part of the South County Connector project. Each of the interchange alternatives studied within the EIS operates at an acceptable LOS. Cost will likely be the determining factor in the selection of the interchange type. MoDOT would ultimately own and maintain the proposed interchange, and would likely fund this component of the project. The interchange configuration would be determined by MoDOT in coordination with FHWA. While a full interchange is recommended by this EIS, a separate study process will determine its configuration. However, as a part of the EIS process, a footprint has been assessed such that various full interchange types could be accommodated.

### **3.6.7 Lansdowne Avenue Intersection**

The grade separation and QRI option is the recommended alternate based upon traffic LOS at the intersections within this area. The primary reason for the improved traffic operations is the better intersection spacing along Lansdowne Avenue. The at-grade intersection is estimated to operate at a LOS F, which would likely cause extensive queuing along Lansdowne Avenue and/or the South County Connector.

### **3.6.8 Watson Road Corridor**

The introduction of a traffic signal on Watson Road at the northbound River Des Peres Boulevard ramp terminal will increase the capacity of a major movement through the interchange without requiring the widening of the existing bridge over Watson Road. The realignment of the Weil/River Des Peres Boulevard intersection to a three-legged roundabout will increase capacity at the intersection by removing the stop condition for the southbound River Des Peres Boulevard to westbound Watson Road movement. The combination of these two improvements will mitigate the additional traffic drawn through the interchange by the South County Connector with minimal impacts to River Des Peres Park and at a minimal cost.

## **3.7 SUMMARY OF BUILD ALTERNATIVES CARRIED FORWARD**

There are two Build Alternatives that are being carried forward into detailed analysis in this EIS. The two Build Alternatives, defined as Build Alternative 1 and Build Alternative 2, differ primarily in the Central Section of the study area between the Big Bend Boulevard intersection and the Interstate 44 interchange. Build Alternative 1 bisects the Laclede Gas property and Alternative 2 extends through the Big Bend Industrial Court area. Build Alternatives 1 and 2 are depicted on Exhibits 3-12 and 3-13, respectively. The footprint areas are sufficient to accommodate the various options as discussed in previous sections. The final selection of a preferred alternative will not be made until after consideration of impacts, agency comments and public/stakeholder comments as a part of the public hearing comment period.

## **3.8 COST ANALYSIS**

The total construction cost for the reasonable alternatives, as presented in Table 3-14, includes construction costs, right-of-way acquisition costs, utility relocation costs, and design and administration costs. The costs are presented by corridor section. These cost estimates are preliminary and are comparative to the level of detail provided in this EIS. The cost estimates were computed using standard construction and right-of-way costs in 2013 dollars. These cost estimates will be refined during subsequent design phases of the project.

**Table 3-14: Estimated Project Costs by Corridor Section (2013 Dollars)**

Cost Components	Estimated Costs (\$ millions)	
	Build Alternative 1 (Through Laclede Gas)	Build Alternative 2 (Through Big Bend Ind. Ct.)
<b>Northern Section (Assumes Median U-Turn Option)</b>		
Hanley & Laclede Station Roads	\$3.98	\$3.98
Through Deer Creek Center to Big Bend	\$4.10	\$4.10
Utility Relocation	\$0.91	\$0.91
Right-of-Way/Relocations	\$13.53	\$13.53
Design & Administration	\$1.80	\$1.80
<b>Northern Section Subtotal</b>	<b>\$24.32</b>	<b>\$24.32</b>
<b>Central Section</b>		
Mainline Roadway	\$9.79	\$9.25
Interchange (Assumes SPUI Type)	\$37.68	\$37.88
Utility Relocation	\$0.55	\$1.15
Right-of-Way/Relocations	\$3.98	\$5.48
Design & Administration	\$9.60	\$9.66
<b>Central Section Subtotal</b>	<b>\$61.60</b>	<b>\$63.42</b>
<b>Southern Section/Terminus</b>		
MetroLink Station (Includes Parking Structure)	\$10.60	\$10.60
Lansdowne Ave./ River Des Peres Blvd.	\$3.21	\$3.21
Watson Road Improvements	\$1.21	\$1.21
Utility Relocation	\$2.40	\$2.40
Right-of-Way/Relocation	\$2.75	\$2.75
Design & Administration	\$3.48	\$3.48
<b>Southern Section Subtotal</b>	<b>\$23.65</b>	<b>\$23.65</b>
<b>Estimated Total Cost</b>	<b>\$109.57</b>	<b>\$111.39</b>

Source: CMT Analysis, 2013

The project costs are based on the Median U-turn option in the northern section of the project. While other intersection options may be selected during the project design phase, these costs are presented since they represent the most conservative scenario when compared to the other options assessed. For example, if traditional intersections at Deer Creek Center and Big Bend Boulevard are determined more feasible during the design phase, costs could be reduced by approximately \$2 million. However, there would likely be trade-offs associated with the amount of delays at the intersections. The costs above are also based on the SPUI type interchange, although other interchange configurations would be assessed by MoDOT during the design phase.



Right-of-way costs shown include both acquisition and relocation costs. Replacement of parking taken at the Shrewsbury MetroLink Station is included in the construction cost estimate for that section. The estimate includes construction of a new parking structure at the MetroLink Station.

The costs shown for design and administration are estimated as a percentage of the total construction cost and include 12 percent of the construction cost for the engineering, two percent for construction staking and eight percent for construction inspection.

Table 3-15 presents a summary of the project costs for each roadway section, and Table 3-16 presents a summary of costs for the various project components.

**Table 3-15: Estimated Project Costs by Roadway Section (2013 Dollars)**

		Estimated Costs (\$ millions)					Total Cost
	Project Sections	Roadway/ Structure(s)	Utility Relocation	ROW	Design & Admin.	Subtotal Cost	
<b>North Section</b>	Hanley & Laclede Station Roads	\$3.98	\$0.56	\$5.33	\$0.91	<b>\$10.78</b>	<b>\$24.32</b>
	Deer Creek Center & Big Bend Blvd.	\$4.10	\$0.35	\$8.20	\$0.89	<b>\$13.54</b>	
<b>Central Section</b>	Through Laclede Gas Property	\$9.79	\$0.05	\$1.21	\$1.97	<b>\$13.02</b>	<b>\$61.60</b>
	Interstate 44 Interchange	\$37.68	\$0.50	\$2.77	\$7.63	<b>\$48.58</b>	
	Through Big Bend Industrial Court	\$9.25	\$0.65	\$2.71	\$2.03	<b>\$14.64</b>	<b>\$63.42</b>
	Interstate 44 Interchange	\$37.88	\$0.50	\$2.77	\$7.63	<b>\$48.78</b>	
<b>Southern Section</b>	MetroLink Station	\$10.60	\$2.20	\$0.42	\$2.56	<b>\$15.78</b>	<b>\$23.65</b>
	Lansdowne/River Des Peres Blvd.	\$3.21	\$0.07	\$1.50	\$0.65	<b>\$5.43</b>	
	Watson Road	\$1.21	\$0.13	\$0.83	\$0.27	<b>\$2.44</b>	

CMT Analysis, 2013

**Table 3-16: Estimated Project Costs Summary (2013 Dollars)**

Cost Components	Estimated Costs (\$ millions)	
	Build Alternative 1	Build Alternative 2
	(Through Laclede Gas)	(Through Big Bend Ind. Ct.)
Roadway and Structures	\$70.57	\$70.23
Utility Relocations	\$3.86	\$4.46
Right-of-Way	\$20.26	\$21.76
Design & Administration	\$14.88	\$14.94
<b>Estimated Total Costs</b>	<b>\$109.57</b>	<b>\$111.39</b>

Source: CMT Analysis, 2013

### 3.9 SUMMARY OF ALTERNATIVES EVALUATION

Table 3-17 provides an overall comparison of the engineering, social/economic, land use, and environmental impacts of the alternatives. Wherever possible, the key factors that define and characterize the alternatives have been evaluated using quantifiable measures. These evaluations are based on the investigations and assessments documented in this EIS. In developing these alternatives and determining their respective impacts, all reasonable measures were incorporated to avoid, minimize and mitigate their adverse impacts.

**Table 3-17: Summary of Alternatives**

Resource	Potential Impacts		
	No Build	Build Alternative 1	Build Alternative 2
<b>Engineering Factors</b>			
Lengths of Build Options (feet)	0	9,800	10,100
Estimated Project Costs (\$millions)	0	\$109.57	\$111.39
Traffic Operations	No Improvement	Improves connectivity and safety, reduces delays	Improves connectivity and safety, reduces delays
<b>Social and Economic Impacts</b>			
Right-of-Way Acquisition (acres)	None	39.7	43.2
Residential Displacements	None	8	8
Business Displacements	None	19	21
Environmental Justice	None	No Impact	No Impact
Changes in Travel Patterns	None	Major	Major
Multi-Modal Considerations	No Benefit	Benefit	Benefit
<b>Land Use Types within Study Corridor (acres)</b>			
Industrial	0	25.3	31.2
Commercial	0	30.3	30.3
Single-Family Residential	0	2.7	2.7
Multi-Family Residential	0	0.0	0.0
Parks	0	9.5	9.5
MetroLink	0	17.0	17.8
Other/Right-of-Way	0	67.2	68.5
<b>Environmental Resources</b>			
Air Quality	No Benefit	Benefit	Benefit
Noise (Estimated Receptors Approaching or Exceeding Noise Abatement Criteria)	NA	43 Single Family	55 Single Family
	NA	7 Multi-Family	13 Multi-Family
Floodplains (acres filled)	0	1.5	1.2
Floodway (acres)	0	1.5	1.2
Wetlands (acres filled)	0	0.26	0.26
Natural Areas	None	None	None
Threatened or Endangered Species	NA	Low Potential for Indiana Bat	Low Potential for Indiana Bat
Cultural Resources	None	3 Adverse Impacts	2 Adverse Impacts
Potential Hazardous Waste Sites	None	15 Potential Sites	16 Potential Sites
Section 4(f) Properties Estimated Acres/Number of Parks Affected	None	3 acres from 2 parks	3 acres from 2 parks

Source: CMT EIS Team Analyses, 2012

### **3.10 AGENCY AND PUBLIC OUTREACH**

A number of public, agency, and stakeholder meetings were held throughout the EIS process to obtain feedback regarding the project. Specifically during the alternatives analysis, an agency briefing, two open house public meetings, and follow-up community and stakeholder presentations were conducted to present the preliminary alternatives. A collaboration meeting was also held with the participating agencies to present the recommended alternatives to be retained for detailed analysis. The input and feedback received from this coordination is one of many factors taken into consideration in the selection of a preferred alternative. Chapter 5, Comments and Coordination, provides further details on the outreach activities as a part of the EIS process. Appendix B, Public and Agency Coordination, includes a summary of the outreach activities conducted as a part of the alternatives analysis, including results of the Alternatives Open House Meetings.

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## **Chapter 4**

# **Affected Environment and Environmental Consequences**

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### **4.0 GENERAL**

This chapter describes the existing social, economic, and environmental conditions in the South County Connector study area, which serve as a baseline for evaluating the impacts of the proposed alternatives. This chapter also identifies the probable beneficial and adverse social, economic, and environmental impacts of the reasonable project alternatives. This chapter is organized into the following sections for each resource category potentially affected by the proposed action.

- Existing and Future Land Use Impacts
- Social and Economic Impacts
  - Demographics
  - Right-of-Way Acquisition and Displacements
  - Economic Impacts
  - Environmental Justice and Title VI Considerations
  - Community Cohesion
  - Community Facilities
  - Changes in Travel Patterns
  - Joint Development and Multi-Modal Considerations
- Air Quality
- Noise
- Water Resources/Water Quality
- Floodplains
- Wetlands and Non-Wetland Waters of the U.S.
- Threatened or Endangered Species
- Cultural Resources
- Hazardous Materials and Solid Waste
- Section 4(f) Properties
- Visual Impacts
- Construction Impacts
- Local Short-Term Uses of the Environment and the Enhancement of Long-Term Productivity
- Irreversible and Irretrievable Commitment of Resources
- Secondary and Cumulative Impacts

Since there are no coastal barriers or coastal zones, farmland, or wild and scenic rivers located within the project study area, these resources are not assessed. For most of the resource categories, information is presented as follows:

- **Affected Environment** – The existing conditions, regulations and/or policies pertinent to the specific resource category, and a description of any unique impact analysis methodologies are included in this section. Exhibits depicting the various environmental resources have been prepared separately for Build Alternative 1 and Build Alternative 2 for clarity purposes, which are referenced in the Affected Environment sections in this chapter as well.
- **Environmental Consequences** – The direct impacts<sup>16</sup> of the No Build and Build Alternatives are presented for each of the above resource categories. The indirect impacts<sup>17</sup> and cumulative impacts<sup>18</sup> are described Section 4.16.
- **Mitigation Measures** – Measures to avoid impacts, minimize harm, and/or mitigate for unavoidable impacts are presented, where applicable. This section also identifies any required permits.

## 4.1 EXISTING AND FUTURE LAND USES

This section evaluates the potential land use impacts of the project alternatives.

### 4.1.1 Existing Land Uses

Existing land uses were based primarily on St. Louis County's Geographic Information System Land Use Files in 2011 and information from the city of St. Louis. Field verification was also conducted in February 2011 and updated in January and April 2012 through windshield surveys of the project area. Existing land uses are depicted on Exhibit 4-1. As shown, the predominant land uses in the general project area include industrial, commercial and single-family and multi-family residential uses. Based on the alternative screening process and refinement of the alternatives being carried forward into detailed analysis, the Build Alternative corridors have been reduced to include the areas that could be potentially impacted by the construction of the South County Connector. Based on the revised study corridors for Build Alternatives 1 and 2, a tabulation of existing land uses is presented in Table 4-1.

**Table 4-1: Existing Land Uses**

Land Use Category	Build Alternative 1 Corridor		Build Alternative 2 Corridor	
	Land Area (Acres)	Percent by Land Use Type	Land Area (Acres)	Percent by Land Use Type
Industrial	23.8	15.7%	29.7	18.6%
Commercial	30.8	20.3%	30.8	19.3%
Single-family Residential	1.8	1.2%	1.8	1.1%
Multi-family Residential	0.6	0.4%	0.6	0.4%
Parks and Recreation	9.5	6.3%	9.5	5.9%
MetroLink Property	17.0	11.2%	17.8	11.1%
Other (Roadway/Railroad Right-of-way)	68.5	45.1%	69.8	43.6%
<b>Total Area</b>	<b>152.0</b>	<b>100.0%</b>	<b>160.0</b>	<b>100.0%</b>

<sup>16</sup> **Direct impacts** are those that would be caused by the proposed action at the same time and place as the proposed action.

<sup>17</sup> **Indirect impacts** are those that would be caused by the proposed action, but would occur later in time or farther removed in distance.

<sup>18</sup> **Cumulative impacts** are impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

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Sources: St. Louis County GIS, 2011, City of St. Louis Land Use Data, and Windshield Surveys by PGAV.

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Excluding land devoted to public roadway or railroad right-of-way, the most dominant land uses within corridor limits are commercial and industrial. Some of the larger commercial and industrial land uses include Deer Creek Center, Big Bend Industrial Court, Laclede Gas, and the Carr Lane Industries complex.

Regarding the Deer Creek Center property, a redevelopment plan was submitted to the city of Maplewood in August 2011.<sup>19</sup> The redevelopment plan proposed to reduce the footprint of the existing buildings for use as a new retail center. The city of Maplewood approved rezoning of the Deer Creek Center property to a Planned Urban Development (PUD) classification on December 5, 2011. Construction of the redevelopment project began in summer 2012.

The MetroLink property accounts for just over 11 percent of the area within the project study corridors. The Shrewsbury MetroLink Station, though not a manufacturing or retail business center, is certainly a major transportation hub within the St. Louis Metropolitan Area that provides park and ride, light rail and bus transit facilities and services. The Station is located on Lansdowne Avenue at River Des Peres Boulevard in Shrewsbury, near Interstate 44. The municipal boundary between the city of Shrewsbury and St. Louis runs through the Station and parking facilities. The Station opened in August 2006, along with the rest of the Phase I Cross-County Extension of MetroLink.

The Shrewsbury MetroLink Station provides approximately 800 free surface commuter parking spaces. In addition, the Shrewsbury MetroLink Station offers commuters local and express bus connections via the eight bus lines serving the Station to locations throughout the region. As a regional transportation facility, MetroLink provides convenient access to the city of Clayton, Lambert St. Louis International Airport, Downtown St. Louis, Scott Air Force Base in Illinois, and other cities and cultural and entertainment destinations. The Shrewsbury MetroLink Station was designed to accommodate a future southern extension of the MetroLink line, either via River des Peres Boulevard to the southeast or more southerly route towards South County Shopping Center or other points. It should be noted that a preferred alternative for extending the MetroLink line has not been selected.

Parks and recreational areas in the Build Alternative study corridors account for approximately 9.5 acres, or about six percent of the total area. There are two public parks located within the revised study area. Further information regarding park impacts is presented in Section 4.11 and in the Draft Section 4(f) Evaluation located in Appendix H.

- **River Des Peres Park** is a city of St. Louis facility that is partially bisected by River Des Peres Boulevard and extends well beyond the study area boundaries. It is also a park that may not be used to its fullest extent, particularly within the boundaries of the study area due to parking limitations. However, it is a park that includes the River Des Peres Greenway Trail, a bicycle and pedestrian trail which connects with other on- and off-street trails that combine to serve much of south St. Louis City and County. As such, the trail has become a regional recreational asset.
- **Deer Creek Park** is located on Hanley Road just north of Deer Creek. Most of this park is owned by St. Louis County, but leased to the city of Maplewood. Deer Creek

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<sup>19</sup> *Deer Creek Shopping Center Redevelopment Proposal*, Summit Development Group; August 30, 2011.



Trail, another Great Rivers Greenway facility, passes through the park and extends east along Deer Creek, through the southern boundary of Deer Creek Center.

Single-family and multi-family residential uses comprise the smallest land use categories in the revised study area, at just over one percent and 0.4 percent of the total land area, respectively. The minimal residential land uses is primarily an outcome of the extensive public involvement activities conducted during the EIS process, where the majority of stakeholders expressed the importance of minimizing impacts to residential areas. Therefore, the alternative screening process and refinement of the Build Alternatives resulted in corridors that minimized impacts to residential land uses.

Finally, as illustrated in Table 4-1, transportation right-of-way, including all public roads and railroads, and the land necessary to support those facilities, constitutes about 45 percent of the revised study area. Clearly, the cities and activity centers serviced by the roadways cannot exist without certain corridors being designated for purposes of public access and transportation.

#### 4.1.2 Future Land Uses

Future land use information was derived from existing planning documents adopted by the various cities and through conversations with planning and development officials from those communities. Future land use has typically been determined through a contemplative community planning process that has involved elected and appointed county and municipal officials, area residents, and business and community leaders. Exhibits 4-2 and 4-3 depict the anticipated future land uses without the proposed South County Connector. As depicted, future land uses are not significantly different from the existing land uses since the project is in an urban area that is already developed with minimal vacant land area. To illustrate the potential future land use impacts, the Build Alternatives are depicted on Exhibits 4-2 and 4-3. Table 4-2 tabulates the future land uses within the Build Alternative Corridors.

**Table 4-2: Future Land Uses**

Land Use Category	Build Alternative 1 Corridor		Build Alternative 2 Corridor	
	Land Area (Acres)	Percent by Land Use Type	Land Area (Acres)	Percent by Land Use Type
Industrial	25.3	16.6%	31.2	19.5%
Commercial	30.3	19.9%	30.3	18.9%
Single-family Residential	2.7	1.8%	2.7	1.7%
Multi-family Residential	0.0	0.0%	0.0	0.0%
Parks and Recreation	9.5	6.3%	9.5	5.9%
MetroLink Property	17.0	11.2%	17.8	11.1%
Other (Roadway and	67.2	44.2%	68.5	42.8%
<b>Total Area</b>	<b>152.0</b>	<b>100.0%</b>	<b>160.0</b>	<b>100.0%</b>

Sources: Strategic Land Use Plan Map of the St. Louis Comprehensive Plan, 2005.  
PGAV interviews with the city of Maplewood, Shrewsbury, and Webster Groves, 2011.

As shown, the pattern of future development is not anticipated to change significantly, even though some changes are already in process. For example, land uses within the proposed Sunnen complex north of the Union Pacific Railroad tracks and adjacent to the Sunnen MetroLink Station has recently changed from a mix of residential uses and vacant land to

commercial uses associated with a Mini Cooper automobile dealership and an expansion of Sunnen's existing operations.

With both of the Build Alternatives, there would be a reduction in commercial and industrial land uses, and a very small reduction of residential land uses, associated with the conversion of these land uses to future highway right-of way. However, there are future opportunities for redevelopment under both of the Build Alternatives. In addition to the Deer Creek Center redevelopment, there may be opportunities for commercial development along the proposed South County Connector corridor at the Shrewsbury MetroLink Station, along the Big Bend Industrial Court, and potential expansion of the Mackenzie Pointe Shopping complex, near the southern terminus of the project area. Further, there may be opportunities for expanded park facilities, including vehicular parking within River Des Peres Park, which could enhance use of this facility by park and trail users.

## **4.2 SOCIAL AND ECONOMIC IMPACTS**

This section evaluates the potential social and economic impacts of the project alternatives. The existing social and economic makeup is presented for the original Core Study Area, Revised Study Area, communities with the study areas (Shrewsbury, Maplewood, Webster Groves, and St. Louis City), St. Louis County, and the state of Missouri. For reference, the original Core Study Area and Revised Study Area are depicted in Figure 4-1. The original Core Study Area incorporates the general corridors for each of the five preliminary alignments analyzed in Chapter 3, Alternatives. The Revised Study Area was established based on the two Build Alternatives that were screened and are being carried forward for detailed analysis in this Chapter.

The data in this section is based primarily on 2010 U.S. Census data, except where noted. The Census blocks and tracts that touch these study areas were used in this analysis. Since the individual Census blocks and Census tracts do not follow the specific study area limits, the information presented in the following sections represents a conservative (larger) estimate for the two study areas. There are 22 Census blocks within 3 Census tracts that were analyzed for the Revised Study Area, and 94 Census blocks within 5 Census tracts that were analyzed for the original Core Study Area.

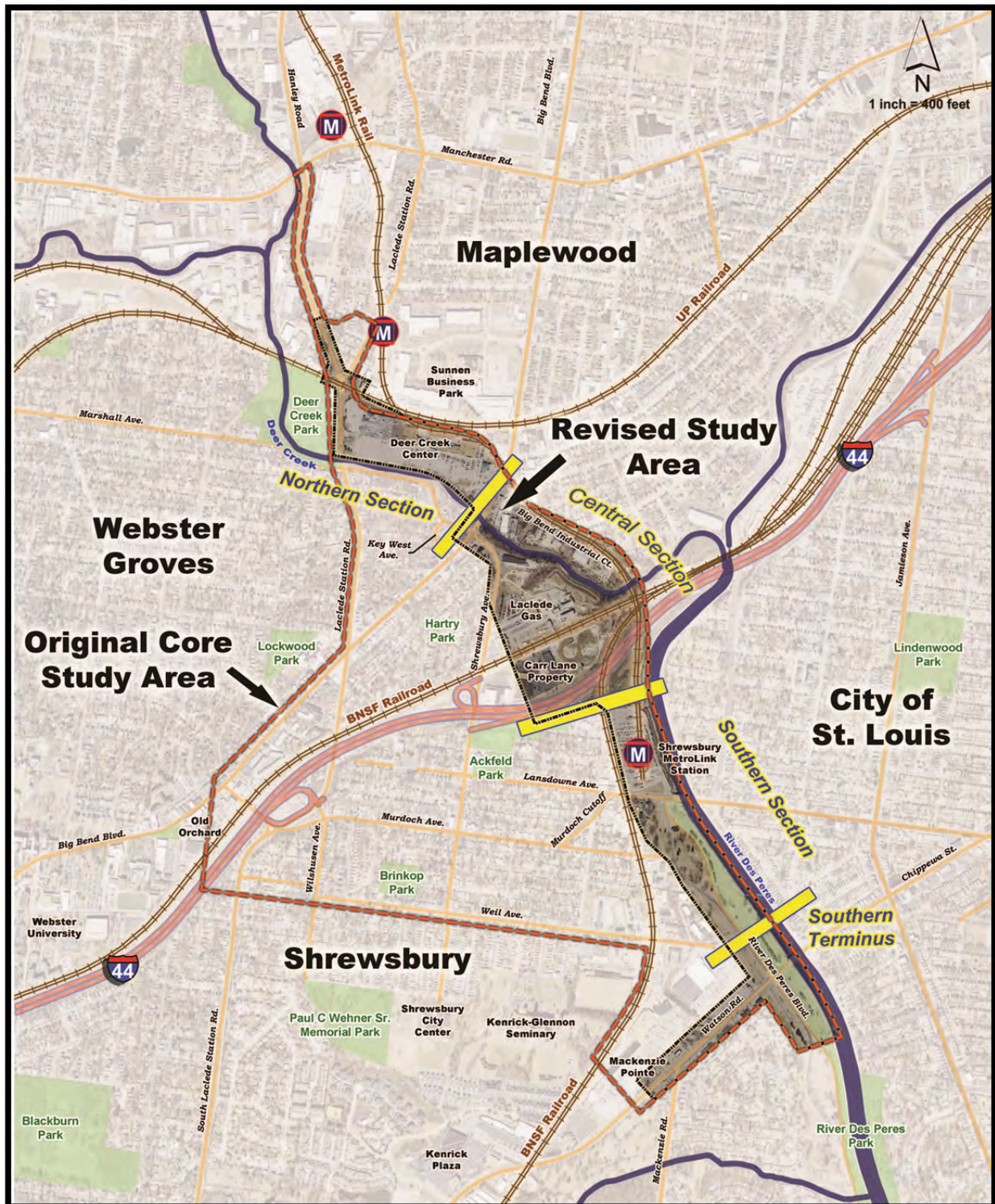


Figure 4-1: Original Core Study Area and Revised Study Area

### 4.2.1 Demographics and Social Characteristics

The analysis which follows is principally tabular in format and includes a demographic profile of residents within each of the previously described geographies, including an examination of the age, gender, race and ethnicity, housing characteristics, and income of that population. Certain data, such as housing values, income and poverty levels, is only available down to the Census tract level. The remaining demographic information, including population, housing, and race/ethnicity data, is available at the Census Block, which is the smallest geographic unit available from the U.S. Census.

#### 4.2.1.1 Population

Table 4-3 provides an overview of the general population characteristics. The data is presented from smallest geographic area to the largest geographic area. Data shows there was a slight decline in population between 2000 and 2010 within the revised study area, and a decline in population within the adjacent communities. Although an increase in population of about 6 percent is shown within the original study area, this is likely the result of changes in the size of the Census blocks between 2000 and 2010, especially taking into consideration the overall drop in population within all of the communities in the project area. Table 4-3 also presents gender and range of ages within each of the geographies. As shown, the Revised Study Area has a greater percentage of persons under the age of 65 when compared to the original study area and the communities within the project area.

**Table 4-3: Population Characteristics**

Population Type	Revised Study Area	Original Study Area	Shrewsbury	Maplewood	Webster Groves	St. Louis City	St. Louis County	St. Louis Missouri
Total Population (2010)	410	3,330	6,254	8,046	22,995	319,294	998,954	5,988,927
Total Population (2000)	413	3,139	6,644	9,228	23,230	348,189	1,016,315	5,595,211
% Change	-0.73%	6.08%	-5.87%	-12.81%	-1.01%	-8.30%	-1.71%	7.04%
% Male	52.0%	48.4%	45.3%	50.2%	47.1%	48.3%	47.3%	49.0%
% Female	48.0%	51.6%	54.7%	49.8%	52.9%	51.7%	52.7%	51.0%
Under 20	70	738	981	1,541	6,394	77,930	260,426	1,601,411
Percent Under 20	17.1%	22.2%	15.7%	19.2%	27.8%	24.4%	26.1%	26.7%
20-64	317	2,234	3,759	5,877	13,068	206,189	589,035	3,549,222
Percent 20-64	77.3%	67.1%	60.1%	73.0%	56.8%	64.6%	59.0%	59.3%
65 and Over	23	358	1,514	628	3,533	35,175	149,493	838,294
Percent 65 and Over	5.6%	10.8%	24.2%	7.8%	15.4%	11.0%	15.0%	14.0%

Source: U.S. Census Bureau, 2010 Census

#### 4.2.1.2 Race and Ethnicity

Table 4-4 examines race and ethnicity at the block level based on the 2010 Census data. This information is used to examine the potential for disproportionately high or adverse impacts on minority populations within the study area. The dominant race within the Revised Study Area is White, with Black/African American as the largest minority population located within one Census block adjacent to River Des Peres Boulevard in the city of St. Louis. Because this entire Census block is located within the Revised Study Area, it contributes to a greater percentage of minority population within the Revised Study Area. Further discussion of potential impacts to this

population is included in the analysis of environmental justice<sup>20</sup> impacts in Section 4.2.4, Environmental Justice and Title VI Considerations.

**Table 4-4: Race and Ethnicity**

Race/Ethnicity	Revised Study Area	Original Study Area	Shrewsbury	Maplewood	Webster Groves	St. Louis City	St. Louis County	St. Louis Missouri
Total Population (2010)	410	3,330	6,254	8,046	22,995	319,294	998,954	5,988,927
White	253	2,689	5,546	5,783	20,384	134,702	687,984	4,850,748
Black/African American	99	378	222	1,381	1,514	156,389	231,801	687,149
American Indian or Alaskan Native	3	7	10	16	39	684	1,632	24,062
Asian	27	81	243	279	343	9,233	34,466	97,221
Pacific Islander	0	0	1	11	3	62	273	5,763
Some Other Race alone	1	8	7	15	25	478	1,187	5,372
Two or More Races	8	72	79	254	322	6,616	16,587	106,142
Hispanic Origin (Any Race)	19	95	146	307	365	11,130	25,024	212,470
% Minority (by Race and Ethnicity)	38.3%	19.2%	11.3%	28.1%	11.4%	57.8%	31.1%	19.0%
% Minority (by Ethnicity Alone)	4.6%	2.9%	2.3%	3.8%	1.6%	3.5%	2.5%	3.5%

Source: U.S. Census Bureau, 2010 Census

#### 4.2.1.3 Housing Characteristics

Table 4-5 presents housing characteristics of each of the geographies. This data includes the total number of housing units, owner and renter occupied units, vacant units, average household and family sizes, median home values, and median gross rent. Occupancy data may provide an indication of neighborhood stability when a larger percentage of household units are owner occupied units as compared to renter occupied or vacant units. As shown, the percentage of owner occupied housing units within the Revised Study Area (13.2%) is significantly lower than all of the other comparison geographies. This is likely due to the number of multi-family apartments located adjacent to River Des Peres Boulevard.

<sup>20</sup> Executive Order 12898 states that, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high or adverse impacts as a result of a proposed project.



**Table 4-5: Housing Characteristics**

Housing	Revised Study Area	Original Study Area	Shrewsbury	Maplewood	Webster Groves	St. Louis City	St. Louis County	Missouri
Total Housing Units	281	1,776	3,487	4,889	9,756	176,002	438,032	2,712,729
Total Occupied Housing Units	234	1,608	3,218	4,269	9,156	142,057	404,765	2,375,611
Total Vacant Housing Units	47	168	269	620	600	33,945	33,267	337,118
Percent Occupied	83.3%	90.5%	92.3%	87.3%	93.8%	80.7%	92.4%	87.6%
Owner Occupied	31	879	1,822	1,783	7,419	64,425	291,937	1,633,610
Renter Occupied	203	729	1,396	2,486	1,737	77,632	112,828	742,001
Percent Owner Occupied	13.2%	54.7%	56.6%	41.8%	81.0%	45.4%	72.1%	68.8%
Average Household Size	1.11-3.04*	1.00-3.20*	1.84	1.88	2.43	2.16	2.42	2.45
Average Family Size	2.00-4.67*	2.00-4.67*	2.76	2.78	3.04	3.08	3.02	3.00
Median Home Value	\$171,100- \$197,100*	\$143,900- \$197,100*	\$170,200	\$153,000	\$244,600	\$122,200	\$179,300	\$137,700
Median Gross Rent	\$561- \$859*	\$561- \$873*	\$853	\$564	\$1,089	\$658	\$789	\$667

Note: \*A range of household size, family size, median home values and median gross rent is shown to accurately reflect the individual Census tracts within the Revised and Original Study Areas.

Source: U.S. Census Bureau, 2010 Census

#### 4.2.1.4 Income and Poverty

Household income and poverty levels are presented in Table 4-6. Because of a confidentiality commitment associated with Census data as it relates to household and family income levels, the only available income data for the two study areas is provided at the Census tract level. For the Revised Study Area, the following three Census tracts were examined: 1031, 2170, and 2196. For the original study area these same three Census tracts, in addition to Census tracts 1022 and 2198, were examined. Although the number of households falling within each of these Census tracts is considerably larger than the actual number of households within the study areas, the range of median household income provided at the tract level should be relatively representative of that which would be found within the defined study area boundaries. As shown, the range of income for the study areas is relatively within the range of the comparable geographies, but somewhat lower than the community of Webster Groves. While poverty levels within the Revised Study Area are slightly higher than the original study area and some of the adjacent communities, the level of poverty is below the communities of Maplewood, city of St. Louis, and the state of Missouri. The U.S. poverty threshold for 2010 for a family of two was \$14,218, and for a family of four was \$22,314.<sup>21</sup>

<sup>21</sup> U.S. Census Bureau, <http://www.Census.gov/hhes/www/poverty/data/inctpovhlth/2010/tables.html>

**Table 4-6: Income and Poverty**

<b>Housing</b>	<b>Revised Study Area</b>	<b>Original Study Area</b>	<b>Shrewsbury</b>	<b>Maplewood</b>	<b>Webster Groves</b>	<b>St. Louis City</b>	<b>St. Louis County</b>	<b>Missouri</b>
Median Household Income	\$36,351- \$51,953*	\$36,351- \$57,303*	\$ 50,960	\$ 36,020	\$74,362	\$33,652	\$57,561	\$ 46,262
Population for Whom Poverty Status is Determined	13,781	27,234	5,893	8,227	22,369	309,377	979,222	5,744,590
Persons Below Poverty Level	1,583	2,270	503	1,288	1,782	80,497	93,673	802,596
Percent Below Poverty Level	11.5%	8.3%	8.5%	15.7%	8.0%	26.0%	9.6%	14.0%

Note: \*A range of median household income is shown to accurately reflect the individual Census tracts within the Revised and Original Study Areas.

Source: U.S. Census Bureau, 2006-2010 American Community Survey Estimate

#### **4.2.1.5 Labor Force Characteristics**

The number of persons employed in a region can provide a general measure of economic activity. For example, employment in higher paid jobs would likely induce more economic activity in a region. Table 4-7 presents the estimated 2010 labor force characteristics for the two study areas, as well as the comparison geographies. Similar to the income and poverty data, the labor force information is provided at the Census tract level for the two study areas. Although the number of employees falling within each of these Census tracts is considerably larger than the actual number of employees within the study areas, the estimated percentage breakdown by job type should be relatively representative of that which would be found within the defined study area boundaries.

Based on the data presented in Table 4-7, the highest percentage of workers for all locations was in the field of educational, health, and social services. The top five employment categories for each of the geographies is shown highlighted in blue. As shown, the two study areas had the same top five employment categories as St. Louis County and Webster Groves, although ranked slightly differently. The revised and original study areas had a higher percentage of manufacturing jobs, whereas the adjacent communities of Shrewsbury, Maplewood, and St. Louis City had a slightly higher percentage of jobs in the arts, entertainment, recreation, accommodation, and food services.



**Table 4-7: Labor Force Characteristics**

Revised Study Area	Original Study Area	Shrewsbury	Maplewood	Webster Groves	St. Louis City	St. Louis County	Missouri
Total civilian employed population 16 years and over							
8,155	15,894	3,430	5,295	11,872	147,153	489,501	2,796,027
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Agriculture, forestry, fishing and hunting, and mining							
22	35	0	20	114	334	1,719	50,534
0.3%	0.2%	0.0%	0.4%	1.0%	0.2%	0.4%	1.8%
Construction							
270	790	72	92	547	6,492	23,053	194,949
3.3%	5.0%	2.1%	1.7%	4.6%	4.4%	4.7%	7.0%
Manufacturing							
841	1,696	221	456	1,023	12,810	51,177	335,811
10.3%	10.7%	6.4%	8.6%	8.6%	8.7%	10.5%	12.0%
Wholesale trade							
255	548	144	76	398	3,483	17,504	86,836
3.1%	3.4%	4.2%	1.4%	3.4%	2.4%	3.6%	3.1%
Retail trade							
826	1,494	356	728	1,028	14,425	54,052	336,271
10.1%	9.4%	10.4%	13.7%	8.7%	9.8%	11.0%	12.0%
Transportation and warehousing, and utilities							
276	544	45	217	259	7,199	23,409	148,128
3.4%	3.4%	1.3%	4.1%	2.2%	4.9%	4.8%	5.3%
Information							
323	478	132	163	442	3,810	14,137	66,031
4.0%	3.0%	3.8%	3.1%	3.7%	2.6%	2.9%	2.4%
Finance and insurance, and real estate and rental and leasing							
659	1,329	382	387	1,149	9,382	45,095	195,057
8.1%	8.4%	11.1%	7.3%	9.7%	6.4%	9.2%	7.0%
Professional, scientific, and management, and administrative and waste management services							
1,178	2,021	465	675	1,874	16,308	59,328	243,560
14.4%	12.7%	13.6%	12.7%	15.8%	11.1%	12.1%	8.7%
Educational services, and health care and social assistance							
2,221	4,075	1,106	1,304	3,333	39,514	118,122	634,599
27.2%	25.6%	32.2%	24.6%	28.1%	26.9%	24.1%	22.7%
Arts, entertainment, and recreation, and accommodation and food services							
548	1,190	234	492	971	18,285	43,743	241,971
6.7%	7.5%	6.8%	9.3%	8.2%	12.4%	8.9%	8.7%
Other services, except public administration							
415	828	164	389	540	7,275	22,837	136,113
5.1%	5.2%	4.8%	7.3%	4.5%	4.9%	4.7%	4.9%
Public administration							
321	866	109	296	194	7,836	15,325	126,167
3.9%	5.4%	3.2%	5.6%	1.6%	5.3%	3.1%	4.5%

Note: Blue highlights indicate the top five employment categories within each geographical area.

Source: U.S. Census Bureau, 2006-2010 American Community Survey Estimate.

## **4.2.2 Right-of-Way Acquisition and Displacements**

This section examines the potential right-of-way acquisition and displacements associated with the No Build and the two Build Alternatives identified for the South County Connector. In an effort to make the property acquisition process as equitable as possible, compliance with regulations including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended (42 USC 4601) and Title VI of the Civil Rights Act of 1964 will ensure adequate consideration and compensation for the residents, businesses, and communities where property is required for the project.

### **4.2.2.1 No Build Alternative**

The No Build Alternative would not require additional right-of-way; therefore, there would be no residential or business acquisitions, displacements, or relocations.

### **4.2.2.2 Build Alternatives**

Table 4-8 identifies the potential right-of-way acquisition impacts associated with the two Build Alternatives. These acquisitions are based on conceptual engineering completed during the EIS process. The actual number of acquisitions and relocations could be reduced or possibly increased as design plans are completed. There may also be opportunities for use of temporary or permanent easements, in lieu of acquisitions, which would be determined during the design phase.

The right-of-way acquisition impacts include both full and partial acquisitions. With full acquisition, the entire tract or parcel would be acquired. There are no partial acquisitions anticipated of residential properties. For businesses, a partial acquisition would be considered if the primary structure could remain in place and the remainder of the property could function as a viable business. There are a number of parcels within the proposed South County Connector Build Alternatives that are already located on existing right-of-way, including roadways, railroads, or utilities. These properties are not included in the calculation of new right-of-way required. Also, there are a number of publicly-owned properties that are either vacant or within existing parks. These properties are included in the right-of-way calculations. Specific impacts to parks are discussed in greater detail in Section 4.11, Section 4(f) Properties.

**Table 4-8: Right-of-Way Impacts**

	<b>Build Alternative 1</b>	<b>Build Alternative 2</b>
<b>New Right-of-Way (acres)</b>	39.7	43.2
Full Acquisition (acres)	19.7	23.1
Residential (acres)	2.3	2.3
Commercial (acres)	16.4	19.8
Public/Park/Vacant (acres)	1.0	1.0
Number of Parcels	40	36
Partial Acquisition (acres)	20.0	20.1
Residential (acres)	0.0	0.0
Commercial (acres)	14.2	14.3
Public/Park/Vacant (acres)	5.8	5.8
Number of Parcels	35	35
<b>Displacements (#)</b>	29.0	28.0
Residential (#)	8	8
Commercial (#)	19	21

Source: O.R.Colon, PGAV, and CMT Analysis, 2012.

#### **Build Alternative 1:**

Build Alternative 1 would require approximately 40 acres of additional right-of-way from 75 parcels. Partial acquisitions would be required from 35 parcels (only a portion of the property) and 40 properties would be full acquisitions. As defined by the St. Louis County Assessor's office, 48 of these parcels are commercial properties, primarily industrial uses. According to the Assessor, a commercial property is any business-oriented property and includes retail, office, industrial, and certain transportation facilities.

There are 19 estimated business displacements under Build Alternative 1. These businesses are located in proximity of Deer Creek Park, Deer Creek Center, along Big Bend Boulevard and Big Bend Industrial Court, and at Watson Road near the project terminus. The types of businesses affected include service-oriented businesses (i.e. restaurant/bars, gas stations, etc.), contractors, manufacturing and distribution, and other light industrial type properties. The majority of these businesses are tenant occupied and are estimated to employ a total of between 200 to 300 employees. In addition, the Shrewsbury Public Works Facility located on Melbourne Avenue would potentially require relocation due to the proposed full interchange at Interstate 44 near the Shrewsbury MetroLink Station. Business relocations and the availability of suitable replacement facilities are addressed in Section 4.2.2.3.

Within the corridor for Build Alternative 1, there are a total of eight residential properties, all of which appear to be occupied. These eight residences would be acquired for construction of the South County Connector. The availability of decent, safe, and sanitary housing for those residing in these eight housing units are discussed in Section 4.2.2.3

#### **Build Alternative 2:**

Build Alternative 2 would require approximately 43 acres of additional right-of-way from 71 parcels. Partial acquisitions would be required from 35 parcels and 36 properties would be full acquisitions. Forty-six (46) of these parcels are commercial properties, primarily industrial uses.

There are 21 estimated business displacements under Build Alternative 2 at similar locations to Build Alternative 1. Some of the businesses along Big Bend Industrial Court may not be impacted. The types of business impacted under Build Alternative 2 also include service-oriented businesses, contractors, distributors, and other light industrial type businesses. The majority of these businesses are tenant occupied and are estimated to employ a total of between 220 to 340 employees. As with Build Alternative 1, the Shrewsbury Public Works Facility located on Melbourne Avenue would potentially require relocation due to construction of a full interchange at Interstate 44 near the Shrewsbury MetroLink Station. The same eight residential properties acquired under Build Alternative 1 would also be acquired under Build Alternative 2.

#### **4.2.2.3 Mitigation Measures**

St. Louis County will conduct the acquisition and relocation of affected residential and commercial properties in accordance with the relocation procedures established in the Uniform Act. The Uniform Act and Missouri state laws require that just compensation be paid to the owner(s) of private property taken for public use. The Uniform Act is carried out without discrimination and in compliance with Title VI (the Civil Rights Act of 1964), the President's Executive Order on Environmental Justice, and the Americans with Disabilities Act.

Among the most sensitive project-related impacts of transportation projects are the acquisition of right-of-way and the relocation of existing residents and businesses. The two Build Alternatives under evaluation for the South County Connector would require the acquisition of additional right-of-way and would necessitate the relocation of existing residences, businesses and other facilities.

Each Build Alternative would require relocation of residential and commercial/industrial properties. A review of available residential and commercial property in St. Louis County and St. Louis City shows a broad range of types and locations available. Based on the extent of available properties, the relocations are expected to be readily absorbed into the local market. It is not anticipated that there will be difficulty finding adequate replacement properties for those who are displaced. Relocation resources are available, without discrimination, to all residential properties and businesses impacted by the project.

An initial search<sup>22</sup> was conducted to identify comparable single-family houses in proximity of the proposed project. The search for available housing was conducted within the 63119 zip code, a zip code that covers portions of the two Build Alternatives. The search was for the approximate range of median home values (\$140,000-\$200,000) that occur within the project area. Based on this search, 80 properties were identified. The search was expanded to the surrounding five zip codes (63109, 63123, 63139, 63143, and 63144), which identified nearly 350 available single-family homes. Therefore, it appears that adequate and nearby housing would be available within the vicinity of the proposed roadway for those displaced by the project.

A similar search was conducted for comparable commercial and industrial properties. This search centered on buildings between 5,000 square feet and 15,000 square feet, a size typical of those that would be required to meet the current needs of businesses displaced as a result of the project. The search focused on six zip codes (63119, 63109, 63123, 63139, 63143, and 63144), which encompass and surround the project area. This search revealed availability of 22 commercial and industrial properties within the area. An expanded search to all of St. Louis County and St. Louis City identified over 100 listings of available industrial properties. As a result of this analysis, it appears that adequate replacement facilities would be available for

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<sup>22</sup> Realtor.com search conducted August 1, 2012.

those displaced as a result of the project. During the design phase of the project, the adequacy of the commercial/industrial properties will need to be determined relevant to access, visibility, and composition of the replacement property in consultation with the business owner.

#### **4.2.3 Economic Impacts**

This section addresses the economic impacts that may be associated with the No Build and Build Alternatives.

##### **4.2.3.1 No Build**

Under the No Build Alternative, no new roadway construction would occur, and no property acquisition or relocations would be required. Essentially, the Revised Study Area would remain largely unchanged. The noted exceptions will be those projects that are either currently underway or are in some phase of plan review by the municipality in which the project is located. The following redevelopment projects are currently in different stages of planning and development within the city of Maplewood.

##### Sunnen Expansion:

For years, Sunnen has been acquiring property in the vicinity of Bartold Avenue and Flora Avenue, in the northern section of the study area. Homes within this area were recently removed to accommodate expansion of the Sunnen complex. This expansion also includes extension of Sunnen Drive to Hanley Road. The expansion project is proposed to include new retail, office and housing development.

##### Mini Cooper Dealer:

A new Mini Cooper dealership was opened in December 2012 in the vicinity of Hanley and Laclede Station Roads.

##### Deer Creek Center:

On August 30, 2011, Summit Development Group submitted a Redevelopment Proposal for Deer Creek Shopping Center in Maplewood. That plan calls for a realignment of the building along the western side of the property and upgrading of the remaining building and site for commercial purposes. Construction is scheduled for completion in early 2013.

##### **4.2.3.2 Build Alternatives**

There are potential positive and negative economic impacts associated with the Build Alternatives. Due to the similarities in potential economic impacts, both Build Alternatives 1 and 2 are presented together in this section.

Investments in highways can contribute to economic development in numerous ways, including improved safety, decreased fuel and other vehicle operating costs, and improved travel time associated with improved access and connectivity through the corridor.

Positive economic effects may be realized during the construction period due to the expenditure of public funds within the study area. This includes direct income for construction workers, which may be expended for goods and services within the area. Indirect economic benefits are expected due to multiplier effects of capital investments whereby local materials suppliers may benefit from providing goods to the construction contractor for the project.

The proposed project would accommodate current, planned and foreseeable development due to improved access. For example, the proposed project will improve capacity and access in the vicinity of Hanley and Laclede Station Roads and thereby increase driver visibility of the new commercial developments that are occurring as part of the Sunnen redevelopment. The proposed project would also significantly enhance the visibility and accessibility to Deer Creek Center.

Extending the South County Connector in proximity to the Shrewsbury MetroLink Station would improve the opportunity for retail development at, or adjacent to, the Station as a result of increased traffic volumes.

The existing retail center at Watson Road and River Des Peres Boulevard would benefit from the proximity of the South County Connector due to improved access and visibility, and should make this area more attractive to businesses and developers for redevelopment.

Although some commercial properties will need to be acquired as a result of this project, a search of 'for lease' and 'for sale' commercial properties shows that ample properties exist within St. Louis County and St. Louis City to meet the needs of those businesses that will require relocation. Furthermore, the available properties are of a size and price that is compatible with those properties that will be acquired. Relative to employment impacts, the current number of employees at the displaced businesses is relatively low. Additionally, replacement sites are, for the most part, readily available. It is expected that most of the businesses could be operational in new/existing nearby locations well before their current buildings are demolished for road construction. As such, job loss would be held to a minimum.

Over the past several years, the city of Shrewsbury has conducted a number of studies designed to identify weak or under-utilized areas along Watson Road that might be suitable for redevelopment. Those studies showed that at least five specific areas were suitable for some type of commercial redevelopment. Although these sites are beyond the limits of the revised Build Alternative corridors, the relative proximity of these sites to the proposed South County Connector would be a positive feature in the potential for redevelopment of these properties. In addition, these sites would benefit from improved traffic flow in the vicinity.

#### **4.2.4 Environmental Justice and Title VI Considerations**

The following section addresses potential impacts on low-income and minority populations that may be located in the project area. This section also addresses the provisions of Americans with Disabilities Act and provisions of Title VI of the Civil Rights.

##### **4.2.4.1 Regulatory Background**

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, signed by the President on February 11, 1994 directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

The U.S. DOT issued DOT Order 5610.2, *Environmental Justice in Minority Populations and Low-Income Populations*, which establishes how the DOT and its operating administrations will integrate EO 12898 with existing regulations and guidance. It states it is the policy of the DOT to promote the principles of environmental justice through the incorporation of those principles into

existing agency programs, policies, and activities.<sup>23</sup> The Order goes on to state it is the DOT's policy to promote the principles of environmental justice by fully considering them throughout the planning and decision-making processes in the development of programs, policies, and activities, using the principles of NEPA, Title VI, the Uniform Act and other applicable DOT statutes, regulations, and guidance. Additional guidance for implementing EO 12898 within the NEPA process is contained in CEQ's *Environmental Justice: Guidance Under the National Environmental Policy Act*.

The following are definitions specific to environmental justice considerations:

- **Low-Income:** The U.S. poverty threshold for 2010 for a family of two was \$14,218, and for a family of four was \$22,314.<sup>24</sup>
- **Minority:** A minority person is defined as an individual who is a member of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. According to the US DOT Order, minority populations mean any readily identifiable groups of minority persons that live in geographic proximity.
- **Disproportionately High and Adverse Effect:** An adverse effect that is predominately borne by a minority and/or low-income population; or would be suffered by the minority and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority and/or non low-income population.

In December 1998, the FHWA issued *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 6640.23)* that requires the FHWA to implement the principles of the DOT Order 5610.2 and E.O. 12898 by incorporating environmental justice principles in all FHWA programs, policies, and activities. Subsequently, on December 16, 2011, FHWA issued a memorandum, *Guidance on Environmental Justice and NEPA*. This memorandum supplements existing guidance on compliance with the principles of environmental justice. It also provides specific examples on how to address environmental justice during the NEPA review process, including documentation requirements.

This EIS reviews the proposed project in light of E.O. 12898, DOT Order 5680.1, DOT Order 6640.23, and FHWA supplemental guidance. MoDOT is also committed to the provisions of the Americans with Disabilities Act of 1990 (ADA) and the provisions of Title VI of the Civil Rights Act of 1964. This is to ensure that no person shall, on the grounds of race, color, national origin, age, sex or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

#### **4.2.4.2 Environmental Consequences**

To briefly summarize the intent of E.O. 12898, the proposed project is to be reviewed for disproportionate or adverse effects on minority populations and/or low-income populations. This review is accomplished through development of demographic baseline conditions and by examining the potential impacts of the Build Alternatives. The baseline demographic analysis for race and ethnicity is included in Section 4.2.1.2 and income and poverty levels are presented in Section 4.2.1.4.

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<sup>23</sup> U.S. Department of Transportation Order 5610.2, Environmental Justice in Minority Populations and Low-Income Populations, December 10, 1997.

<sup>24</sup> U.S. Census Bureau, <http://www.Census.gov/hhes/www/poverty/data/inctpovhlth/2010/tables.html>



Based on this demographic analysis, there was one Census block (Block 2028, Block Group 2, Census Tract 1031, St. Louis) adjacent to the project limits along Nottingham Place that had a higher minority population (33% Black or African American) than the other blocks in the Revised Study Area. This block includes the Park-Val Apartments, a multi-family apartment complex. There would be no acquisitions required in this area, and no changes in travel patterns. However, since this residential area is adjacent to the proposed project area, a noise receptor analysis was conducted at this location to determine if there would be potential noise impacts associated with the Build Alternatives. Based on that analysis, the predicted noise level at this property with implementation of either Build Alternative would be 57.1 dBA, which does not approach or exceed the noise abatement criteria (NAC) for residential land uses (Category B). This value is well below the 66 dBA threshold requiring the evaluation of noise abatement measures (see Section 4.4, Noise).

No other predominant minority or low-income populations have been identified in the revised project study area. Therefore, in accordance with the provisions of E.O. 12898 and FHWA Order 6640.23, implementation of either Build Alternative would have no disproportionate or adverse impact on minority or low-income populations. No further environmental justice analysis is required.

#### **4.2.4.3 ADA Issues**

There has not been any indication of a definable segment of the population in the study area who is disabled or otherwise is in need of specialized services. Pedestrian access would be provided along the proposed South County Connector via a sidewalk on at least one side of the proposed roadway. All proposed sidewalks would be constructed to meet ADA design standards.<sup>25</sup> Any existing sidewalks that are disturbed as part of the project will also be upgraded to current ADA standards. By relocating a substantial portion of vehicular traffic from existing local streets onto the South County Connector, safety for pedestrians in the residential areas is also expected to improve as a result of the decreased traffic volumes.

#### **4.2.5 Community Cohesion**

Community cohesion is the measure of how physically intact neighborhoods are within a community. It is also a measure of demographic characteristics of a community, particularly as it relates to race or ethnicity, in as much as those factors define a neighborhood based on the interaction among groups and persons within the community.<sup>26</sup>

The Revised Study Area for the South County Connector Build Alternatives includes three inner ring suburban communities - the city of Maplewood, the city of Shrewsbury, and a small portion of the city of Webster Groves, as well as a portion of the city of St. Louis. This portion of the city of St. Louis is occupied by small residential neighborhoods east of River des Peres and south of Watson Road. The city of St. Louis is the core city of the St. Louis region.

Based on the demographic information presented previously, these communities provide similar community settings with a variety of housing styles and values accommodating a range of family incomes. Minority populations in these communities comprise from 11 percent of the total population in Shrewsbury and Webster Groves to 57.8 percent of the total population in St. Louis. Across these study area communities, persons of Black/African American and Asian races make up the majority of the minority population.

<sup>25</sup> 2010 ADA Standard for Accessible Design, U. S. Department of Justice, September 15, 2010.

<sup>26</sup> Community Cohesion As A Transport Planning Objective, Victoria Transport Policy Institute; February 22, 2012.

Neighborhoods in the study area are generally delineated by physical features such as Deer Creek, railroad tracks, Interstate 44, and other major roads including Lansdowne Avenue, Shrewsbury Avenue, Big Bend Boulevard, and Hanley Road/Laclede Station Road. Maplewood and Shrewsbury are part of a Community Planning Area defined in the *St. Louis Regional Sustainable Communities Study*<sup>27</sup> under development by the East-West Gateway Council of Governments, St. Louis County, and ten other regional partners. Each community, although they are similar, retains a strong sense of identity.

#### **4.2.5.1 No Build Alternative**

Generally, the No Build Alternative would have minimal effects on community cohesion. Current travel patterns place heavy traffic volumes on Lansdowne Avenue, Shrewsbury Avenue, Murdoch Cut-Off, and Murdoch Avenue (see Chapter 3), adversely affecting the walkability of the residential areas that border these streets. This is particularly true of Lansdowne Avenue, where some of the residents will park on the existing sidewalk because the high volume of existing traffic, along with sight distance concerns on hills and near intersections, makes backing out of driveways difficult. Traffic volumes would continue to increase under the No Build Alternative, adversely affecting the community cohesion in these neighborhoods.

#### **4.2.5.2 Build Alternatives**

The Build Alternatives would have both positive and negative effects on community cohesion. A main concern identified through community outreach completed as part of the EIS process was the desire to keep neighborhoods intact and to protect residential areas. Both of the Build Alternatives are routed to avoid residential areas and neighborhoods to the extent practicable. The Build Alternatives are proposed along the edges of residential areas and in proximity to existing transportation corridors established by the BNSF Railroad, the MetroLink, and River Des Peres Boulevard. The Build Alternatives follow existing physical boundaries that separate residential areas from commercial areas. Both Build Alternatives would remove traffic from many of the local streets, especially drivers seeking access to destinations north or south of the study area.

Both Build Alternatives would maintain access to community facilities, including Deer Creek Park, Deer Creek Greenway and Trail, and River Des Peres Park. The South County Connector could improve access into and use of River Des Peres Park by providing parking within the north “eyelet” of the existing boulevard, south of Lansdowne Avenue and the Shrewsbury MetroLink Station.

Between Hanley Road and Big Bend Boulevard, both of the Build Alternatives generally border Deer Creek and the edge of Deer Creek Center. The proposed Build Alternatives are on the east side of Deer Creek, away from existing residential areas. This residential area is within the city of Webster Groves, and is physically defined by the triangle formed by Deer Creek, Laclede Station Road and Big Bend Boulevard, generally referred to as the Tuxedo Neighborhood. To access the redevelopment proposed for Deer Creek Center, residents of the Tuxedo Neighborhood would continue to travel along Laclede Station Road or Big Bend Boulevard over Deer Creek to this commercial area.

Both Build Alternatives have been routed through portions of the industrial area between Big Bend Boulevard and Interstate 44. By avoiding residential neighborhoods, both alternatives have the potential to affect the cohesive nature of the commercial and industrial segments of

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<sup>27</sup> <http://www.ewgateway.org/rpsd/>

this area. Both of the Build Alternatives would likely impact businesses along Big Bend Industrial Court. Build Alternative 1 would also bridge over the Laclede Gas Property with minimal facility and operational impacts. See Section 4.2.2 for discussion of business impacts and relocations.

Both Build Alternatives would remove a portion of the surface parking lot associated with the Shrewsbury MetroLink Station, but would not affect the Station itself. Access and circulation within the remaining portion of the parking lot would be reconfigured to accommodate bus and other transit providers that provide connections between the Shrewsbury Station and other transit facilities, therefore maintaining connectivity with existing local and regional transit services. A few residential properties would be acquired between the South County Connector and the BNSF Railroad south of Lansdowne Avenue. Many of the properties in this area have become redeveloped as commercial or light industrial businesses. The removal of these residential properties should not affect community cohesion.

#### **4.2.6 Community Facilities and Services**

There are a number of community facilities in the vicinity of the Core Study Area for the South County Connector. These facilities, listed below, are depicted on Figure 4-2.

- St. Michael's Elementary School
- Shrewsbury MetroLink Station
- Shrewsbury Public Works Department
- Shrewsbury City Center
- Shrewsbury Police and Fire Station
- Ackfeld Park
- Shrewsbury Family Aquatic Center
- Deer Creek Park
- River Des Peres Park
- Wehner Park
- Brinkop Park
- Hartry Park
- River Des Peres Greenway Trail
- Deer Creek Trail

There are four public school districts that serve the residents located in Core Study Area. The Affton School District and the Webster Groves School District serve the residents of Shrewsbury. The residents in Maplewood are served by the Maplewood Richmond Heights School District. Residents in Webster Groves are served by the Webster Groves School District. Residents of the city of St. Louis that live west and south of River Des Peres are served by the St. Louis School District. There are a number of private schools that also serve students in these communities. There are no public schools located in the Core Study Area, but there is one private school, St. Michael's Elementary School, located in Shrewsbury as depicted in Figure 4-2. No schools are located within the Revised Study Area.

The city of Shrewsbury operates a public works facility at 7309 Melbourne Avenue. This facility is bounded on the north by Interstate 44 and on the east by the Burlington Northern Santa Fe railroad tracks that form the western edge of the Shrewsbury MetroLink Station.

The Shrewsbury City Center, which houses the City Hall and Parks and Recreation Department, is located at the southern end of Shrewsbury Avenue, adjacent to Wehner Park. Ackfeld Park, at the corner of Lansdowne Avenue and Shrewsbury Avenue, is located south of Sutherland

Avenue and the Shrewsbury Family Aquatic Center. The Shrewsbury municipal police and fire station is located at the corner of Lansdowne Avenue and Shrewsbury Avenue.

Deer Creek Park, mostly owned by St. Louis County but leased to the city of Maplewood, is located on Laclede Station Road, immediately north of Deer Creek. River Des Peres Park, owned by the city of St. Louis, is a narrow park located south of the Shrewsbury MetroLink Station across Lansdowne Avenue, and extends south parallel to River des Peres. Brinkop Park and Hartry Park are both neighborhood parks located in, and owned by, the city of Shrewsbury, but these parks are outside of the Revised Study Area.

The Shrewsbury MetroLink Station is a transit facility providing access to Light Rail Transit and to bus transit that serves the South St. Louis area and the South St. Louis County Area.

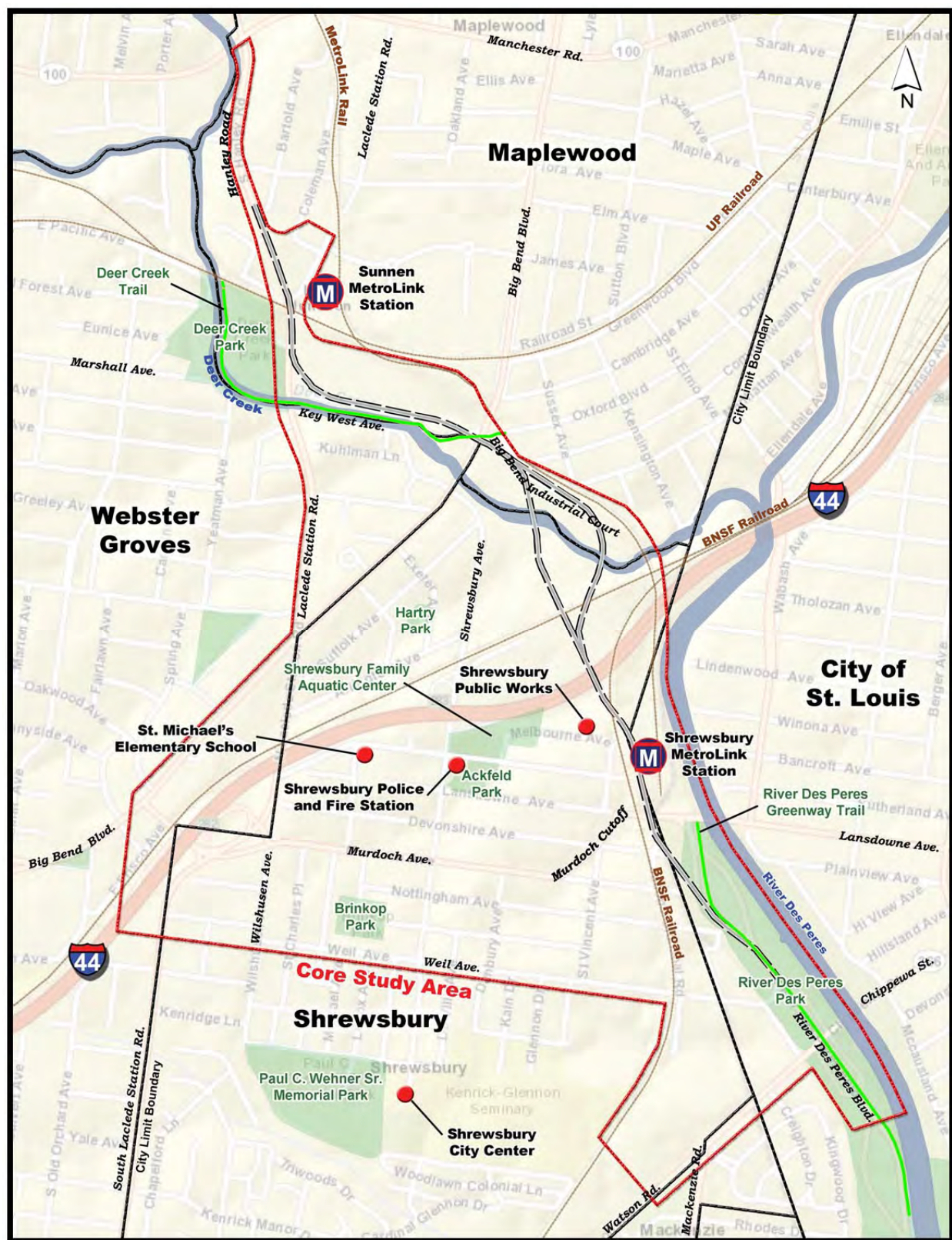


Figure 4-2: Community Facilities

#### **4.2.6.1 No Build Alternative**

The No Build Alternative would not affect any of the community facilities identified in the study area. Existing travel patterns have an impact on access to community facilities. Travelers from outside the immediate area use local roads to access the MetroLink system, Interstate 44, and areas north and south of Interstate 44. This contributes to high traffic volumes on local roads, particularly on Shrewsbury Avenue, Lansdowne Avenue, Murdoch Avenue and Murdoch Cut-Off. Traffic volumes on Lansdowne Avenue adversely affect pedestrian movements, and make it difficult for students to walk to the St. Michael's School. High volumes of traffic on Shrewsbury Avenue and Lansdowne Avenue at certain periods of the day also affect access to the Shrewsbury Police Station and Ackfeld Park from neighborhoods to the south and east. Traffic volume along River Des Peres Boulevard and the lack of vehicle parking in or adjacent to River Des Peres Park impede access to and use of the park.

Existing travel patterns also impede access to the Shrewsbury MetroLink Station from the west, limiting ridership from western suburbs, especially with no direct Interstate access to the Station. As traffic volumes increase over time, travel time and ease of access to local public facilities and services will continue to worsen.

#### **4.2.6.2 Build Alternatives**

Under both Build Alternatives, right-of-way would need to be acquired from Deer Creek Park and River Des Peres Park. Trails in the study area, including River Des Peres Greenway Trail and Deer Creek Trail would also be affected by the Build Alternatives. Detailed impacts to these facilities are discussed in Section 4.11.

Great Rivers Greenway started preparing a master plan in 2012 for improving the River Des Peres Greenway Trail. Because of the proposed tie-in point with the northern end of River Des Peres Boulevard, a portion of the River Des Peres Trail would potentially need to be relocated. In addition, tying into the northern end of River Des Peres Boulevard provides an opportunity to provide parking within the park, improving access to and use of the park facilities.

Within the study area, the Deer Creek Trail extends along Deer Creek from Deer Creek Park to Big Bend Boulevard. Ultimately, the Deer Creek Trail is proposed to connect to the River Des Peres Greenway Trail. Both of the Build Alternatives parallel the Deer Creek Trail, which may be impacted by the proposed South County Connector. Impacts would be temporary and would include any reconstruction of the trail where necessary to mitigate impacts. Ultimately, both Build Alternatives would provide improved access to the Deer Creek Trail, and would facilitate connectivity of the trail system in the vicinity of the proposed South County Connector.

The proposed full interchange at Interstate 44 with the South County Connector could potentially impact the Shrewsbury Public Works facility adjacent to Interstate 44 and immediately across the BNSF railroad tracks from the Shrewsbury MetroLink Station. However, until a specific type of interchange is identified, it is unknown if the Shrewsbury Public Works Facility would require relocation or could be preserved in place through use of retaining walls.

The two Build Alternatives do not impede access to other community facilities. Travel patterns to schools are maintained. Pedestrian, bicycle, and vehicular access to Ackfeld Park, the Shrewsbury Fire and Police Station, and area schools would be improved due to the reduction in traffic volumes anticipated along Lansdowne Avenue and Shrewsbury Avenue resulting from implementation of the project. The two Build Alternatives provide additional crossings to the



many physical barriers that already exist in the study area. Those barriers include Deer Creek, Interstate 44, and the many railroad tracks crossing the study area.

There is no change in access to the Shrewsbury MetroLink Station from the south and east. Access to the Shrewsbury MetroLink Station is improved for commuters travelling from the north and the west by way of the new direct access to Interstate 44. The interchange would eliminate the use of many of the local streets by travelers using the Station. The proposed interchange would also facilitate future implementation of Bus Rapid Transit to the Shrewsbury MetroLink Station.

The Build Alternatives would also improve access and travel times for first responders throughout the study area.

#### **4.2.7 Changes in Travel Patterns**

Changes to travel patterns and accessibility between the No Build and Build Alternatives were analyzed to determine the potential impact of the South County Connector. Changes to travel patterns and access under the Build Alternatives are presented for each of the key intersections and segments along the project corridor.

##### **4.2.7.1 No Build Alternative**

The No Build Alternative would not directly change travel patterns or accessibility within the study area. With the forecast increase in traffic volumes in future years, drivers may develop differing routes to access destinations to avoid highly congested areas. Access to and from Interstate 44 would remain at Laclede Station Road/Murdoch Avenue and Shrewsbury Avenue. Access to the Station from Interstate 44 would remain using local streets to reach the Laclede Station Road/Murdoch Avenue and Shrewsbury Avenue interchanges.

##### **4.2.7.2 Build Alternatives**

###### Laclede Station Road Intersection/Deer Creek Center/Deer Creek Park

Each of the Build Alternatives would realign Laclede Station Road to “T” into the newly constructed South County Connector. Therefore, turning movements would be required when traveling to and from Hanley Road and Laclede Station Road. Access to the adjacent properties in this area would change with the Build Alternatives. The type of access to Deer Creek Center and Deer Creek Park would be dependent of the type of intersection type selected during the design phase.

###### Big Bend Boulevard Intersection

Each of the Build Alternatives creates a new intersection with the South County Connector and Big Bend Boulevard. Traffic patterns would shift to the South County Connector from other routes including Big Bend Boulevard, Shrewsbury Avenue and Laclede Station Road to the South County Connector and the new interchange with Interstate 44. In addition to heavy through-traffic on the South County Connector, a large traffic movement from the north on Big Bend Boulevard to the south on the South County Connector is projected. Access to properties adjacent to this major intersection may be impacted. If access cannot be provided, a whole take of the property has been included within the alternative.

###### Interstate 44 Interchange

Both Build Alternatives 1 and 2 would include a new full interchange with Interstate 44. The proximity of the partial Shrewsbury Avenue interchange to the new full interchange would



require the Shrewsbury interchange to be eliminated. Travelers who currently use the Shrewsbury Avenue interchange to access Interstate 44 to and from the east would use the new South County Connector interchange. Access to the South County Connector interchange from Shrewsbury Avenue would be by using either Lansdowne Avenue to the south of Interstate 44 or Big Bend Boulevard to the north.

Substantial traffic diversion is expected from other more congested interchanges. This diversion would occur as drivers perceive using the South County Connector interchange as a more efficient route. The amount of diversion is not expected to significantly vary with the type of interchange selected.

#### Lansdowne Avenue and MetroLink Station

A new full interchange in the vicinity of the Shrewsbury MetroLink Station provides more direct access to the Station from Interstate 44, and is anticipated to significantly reduce traffic levels on the local residential streets in the project area. The South County Connector would provide direct access to the MetroLink parking lot with a partial intersection and a connector roadway would provide access to Lansdowne Avenue at the MetroLink entrance.

#### Watson Road

Both Build Alternatives 1 and 2 would include improvements to the interchange of River Des Peres Boulevard and Watson Road. These improvements will increase the capacity of the interchange, but would require different routes through the interchange for some movements. In particular eastbound Watson Road to northbound River Des Peres Boulevard would turn left at a new signalized intersection, rather than the right turn that exists today. Improvements to the Watson Road interchange would require the approval of MoDOT.

Improvements to the interchange would also restrict some turns at the Weil Road and River Des Peres Boulevard intersection. In order to make these movements, drivers would have to utilize either the Watson Road interchange or the Lansdowne Avenue connection.

### **4.2.8 Joint Development and Multi-Modal Considerations**

Under FHWA guidelines (Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents), an agency developing a project that uses Federal money should identify and discuss those joint-development measures that will preserve or enhance an affected community's social, economic, environmental, and visual values. As required by that guidance, this section discusses proposed public works projects that might be developed jointly with the proposed South County Connector project.

As a part of ongoing public outreach and agency coordination during the EIS process, one of the key issues raised was multi-modal opportunities that should be considered in the project area. Accordingly, the following sections provide a particular focus on the existing and proposed transit services and pedestrian and bicycle facilities in the study area. Potential impacts to these facilities, and opportunities for expanded multi-modal connectivity as a result of the South County Connector project, are presented. Both of the Build Alternatives have similar opportunities for joint development and multi-modal connectivity and are discussed together in the following sections. Other potential private development opportunities and public partnerships are also briefly discussed.

#### 4.2.8.1 Metro

Metro is the St. Louis metropolitan transit operator, providing scheduled MetroBus, MetroLink light rail and call-a-ride (paratransit) van service. The MetroLink Blue Line travels through the study area. There are two MetroLink Stations located in the general project area. The Sunnen MetroLink Station is located adjacent to the northern end of the project limits and primarily provides access to the Sunnen Business Park area. The Shrewsbury MetroLink Station, located south of Interstate 44 in the central section of the project study area, is the end of the Blue Line on the south. The Shrewsbury Station is also a major Transit Center for the Metro system, containing the MetroLink stop and eight MetroBus routes.

Currently, access to the Shrewsbury MetroLink Station is via River Des Peres Boulevard from the south, Murdoch Avenue and Lansdowne Avenue from the west, or Lansdowne Avenue from the east. There is no direct access to the Shrewsbury Station from Interstate 44, which may contribute to lower Metro ridership by commuters from the western suburbs along Interstate 44. As a part of the South County Connector, a full interchange is proposed at Interstate 44 near the Shrewsbury Station under both of the Build Alternatives. This direct access from the interstate to the Shrewsbury Station would likely attract additional ridership to the Shrewsbury Station, improving multi-modal connections between vehicles and transit facilities.

Access from Lansdowne Avenue to the MetroLink Station would be maintained to provide access for the local roadway network to the MetroLink facilities.

The proposed alignment of South County Connector for both of the Build Alternatives travels through the western portion of the parking lot of the Shrewsbury Station. In order to compensate for the loss of parking to accommodate the new roadway, additional parking will be provided to maintain the current parking lot capacity as part of the South County Connector project. The additional parking could be provided through expansion of the current surface lot to the north or by constructing a parking structure within the current parking lot. A parking garage was planned for this Station during early planning stages of the MetroLink extension project. This latter alternative could also include ground floor retail with parking above and potential bridged access to the MetroLink Station platform.

Extension of the MetroLink Blue Line to the south was studied by the East-West Gateway Council of Governments<sup>28</sup> and Metro.<sup>29</sup> Options for the rail extension included a route between River Des Peres Boulevard and the River des Peres and a route along the existing BNSF rail line. Construction of the South County Connector would not prevent the construction of either of these MetroLink alignments. The details of proposed crossings of these two alignments with the South County Connector will be further studied as a part of the design phase of the project.

#### 4.2.8.2 Bus Rapid Transit

The addition of Bus Rapid Transit (BRT) to the St. Louis region is currently being studied. A Corridor Planning Study and Alternatives Analysis for BRT are being managed by Metro, EWGCOG, and MoDOT. The five corridors for potential BRT service include: Interstate 70, Interstate 64, Interstate 44, Interstate 55 and Grand Avenue. If BRT service is implemented along the Interstate 44 corridor, a stop at the Shrewsbury MetroLink Station would be an important part of that route. Efficient access from Interstate 44 and the Shrewsbury Station would be essential to the operations of the BRT line. The full interchange with Interstate 44

<sup>28</sup> Metro South Study - Alternative Analysis and Draft EIS, U.S. DOT – Federal Transit Administration and East-West Gateway Council of Governments, 2005.

<sup>29</sup> Moving Transit Forward - St. Louis Regional Long-Range Transit Plan, Metro, 2010.

proposed as part of the South County Connector would be a significant improvement to the interstate access over the current roadway network. Efficient bus access from Interstate 44 to the MetroLink Station through the South County Connector, as well as bus queuing and parking will be further studied as a part of the design phase of the project.

#### 4.2.8.3 Pedestrian and Bicycle Facilities

A major consideration in highway planning and design is the interaction among motorists, pedestrians and bicyclists. The pedestrian/bicycle facilities located within the project area include sidewalks on side streets; off-street pedestrian/bicycle trails; and existing, planned and proposed on-street and off-street bicycle routes.

Planned bicycle facilities in the project area have been identified based on coordination and documentation from Great Rivers Greenway (GRG) and Trailnet, who are currently serving as Participating Agencies in the EIS process. Potential impacts and opportunities for connectivity, to these facilities have also been discussed at various coordination meetings. Chapter 5, Comments and Coordination, documents the coordination activities that have occurred during the EIS process. Exhibit 4-4 in Appendix A depicts the existing and planned bicycle facilities in the project area based on the Gateway Bike Plan.<sup>30</sup> Potential opportunities for pedestrian and bicycle connectivity in the project area are also generally depicted based on the coordination meetings with various stakeholders, including GRG and Trailnet.

Although the specific design features of the pedestrian and bicycle facilities have not yet been identified for the proposed South County Connector in this EIS, the corridors that are studied for both of the Build Alternatives are sufficient to accommodate various types of pedestrian and bicycle access. This could include options such as wide outside lanes, striped on-street bike lanes, and/or parallel trails. Figure 4-3 depicts a potential cross-section for the at-grade sections of the proposed South County Connector. The details of proposed accommodations for pedestrians and bicyclists along portions of the South County Connector will be further studied and identified as a part of the design phase of the project.

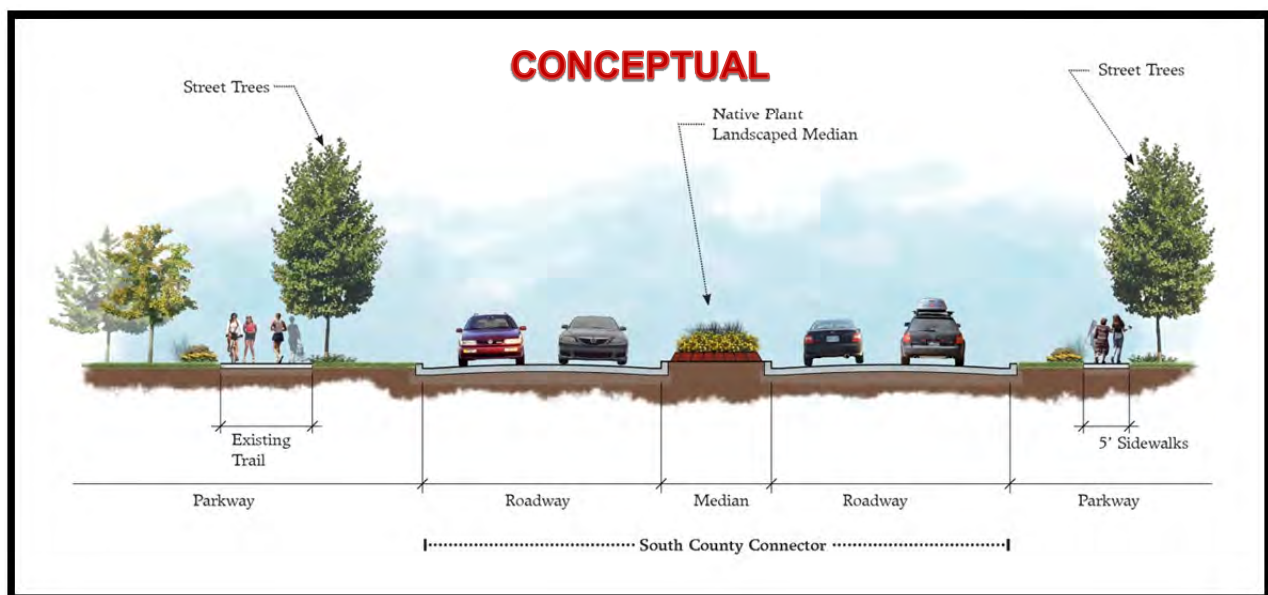


Figure 4-3: South County Connector – Potential At-Grade Cross-Section

<sup>30</sup> Gateway Bike Plan, Great Rivers Greenway, August 2011.

Providing access for bicyclist and pedestrians across Interstate 44 using the South County Connector may not be practical or feasible due to the length and the grades of bridge structure to cross over Interstate 44. Also, there are no facilities that could be accessed by the pedestrians or bicyclists between the Shrewsbury MetroLink Station and Big Bend Boulevard since the new roadway would be mainly on bridge structure that would traverse through private industrial properties (Laclede Gas Property or Big Bend Industrial Court).

Conceptual drawings depicting potential cross-sections on the proposed bridge over Interstate 44 are depicted in Figure 4-4 to Figure 4-6. During the design phase of the project, there will be opportunities to coordinate further with stakeholders on pedestrian and bicycle facilities and how connections to the South County Connector could best be accommodated.

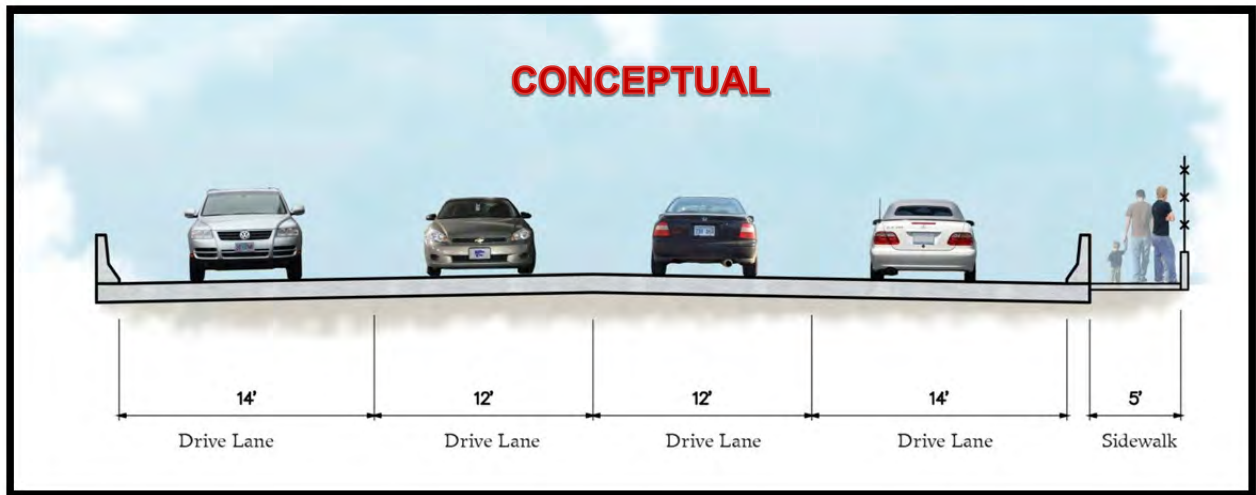


Figure 4-4: Bridge over Interstate 44 – Option A Potential Cross-Section

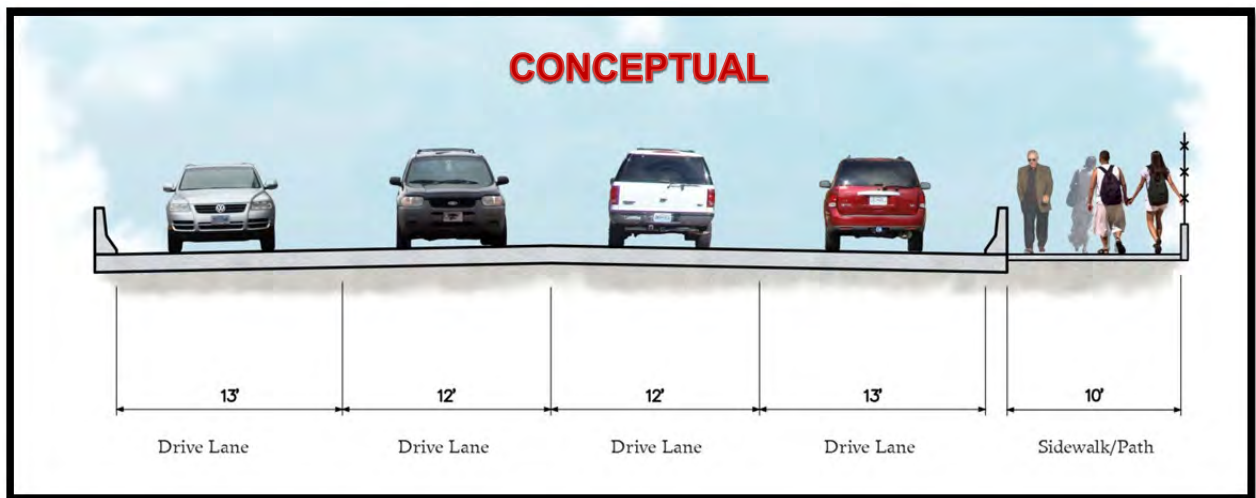


Figure 4-5: Bridge over Interstate 44 – Option B Potential Cross-Section

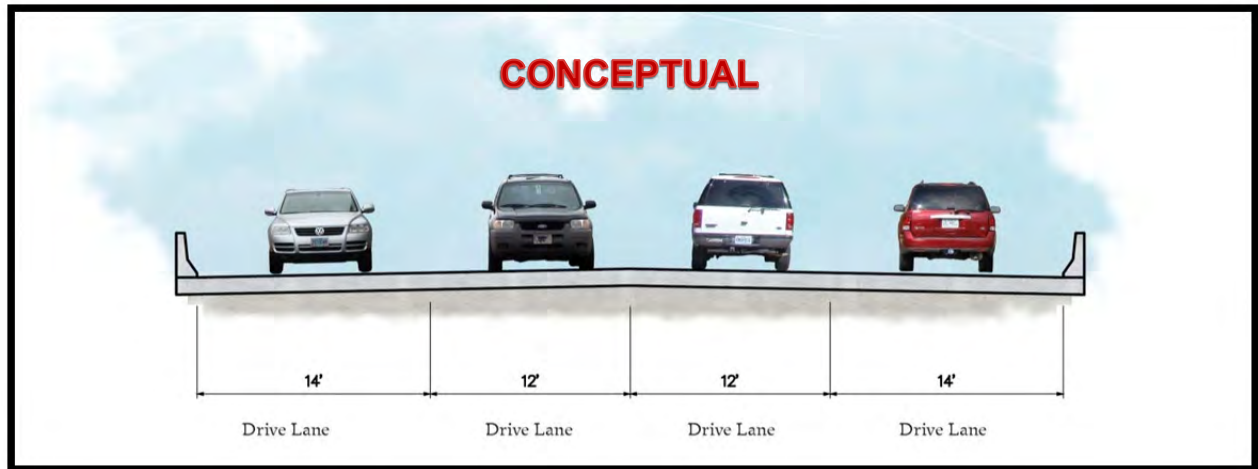


Figure 4-6: Bridge over Interstate 44 – Option C Potential Cross-Section

Since the proposed South County Connector would include a full interchange near the Shrewsbury MetroLink Station, and the interchange ramps at Shrewsbury Avenue would be eliminated, traffic levels along Shrewsbury Avenue and the adjacent connecting local roads are expected to drop substantially. Therefore, access through the central portion of the project area for bicyclists and pedestrians could be accommodated on local roads. This could include shared lanes or restriping lanes to accommodate a bicycle lane on Shrewsbury Avenue and other local roadways that would likely experience substantially reduced vehicular traffic levels.

Figure 4-7 and Figure 4-8 depict the existing roadway cross-sections along Lansdowne Avenue and Shrewsbury Avenue, respectively. Upon completion of the South County Connector, traffic levels on these and other local roadways in the study area are anticipated to substantially drop. This reduction in traffic could create potential opportunities for enhanced pedestrian and bicycle connectivity along these roadways. Conceptual drawings depicting the potential types of pedestrian and bicycle access that could be accommodated on local roads are shown in Figure 4-9 and Figure 4-10, and a potential cross-section along Shrewsbury Avenue is depicted on Figure 4-11.



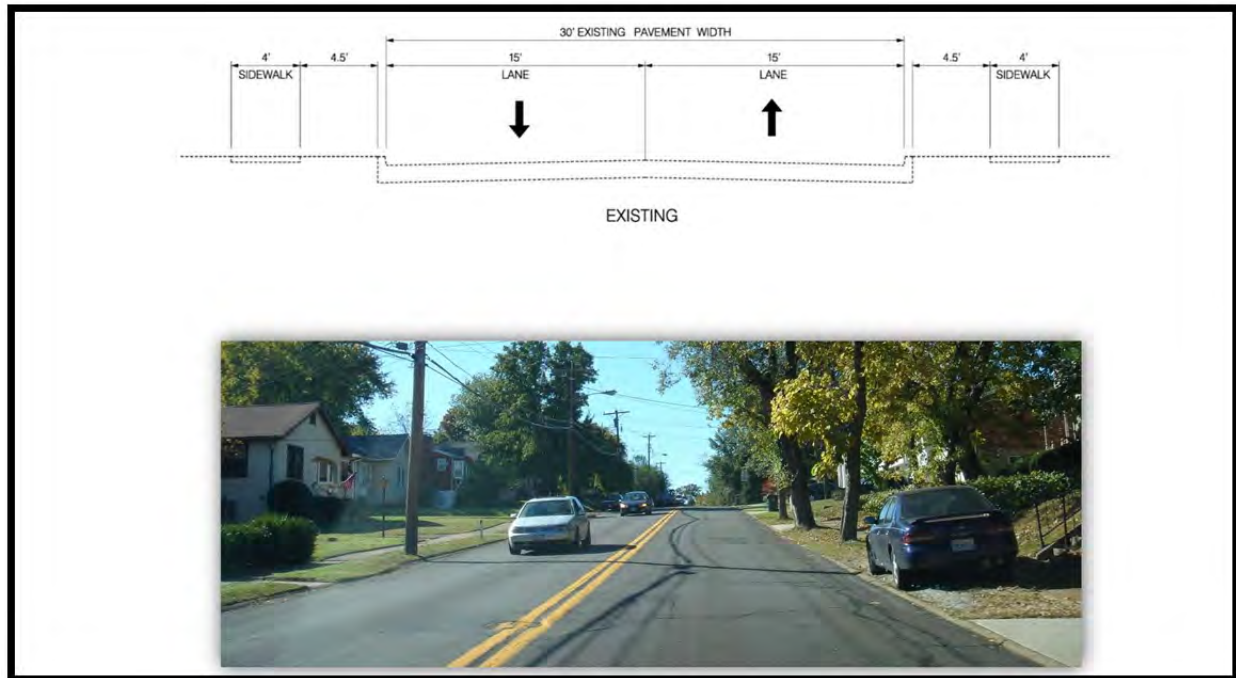


Figure 4-7: Lansdowne Avenue - Existing Cross-Section



Figure 4-8: Shrewsbury Avenue - Existing Cross-Section

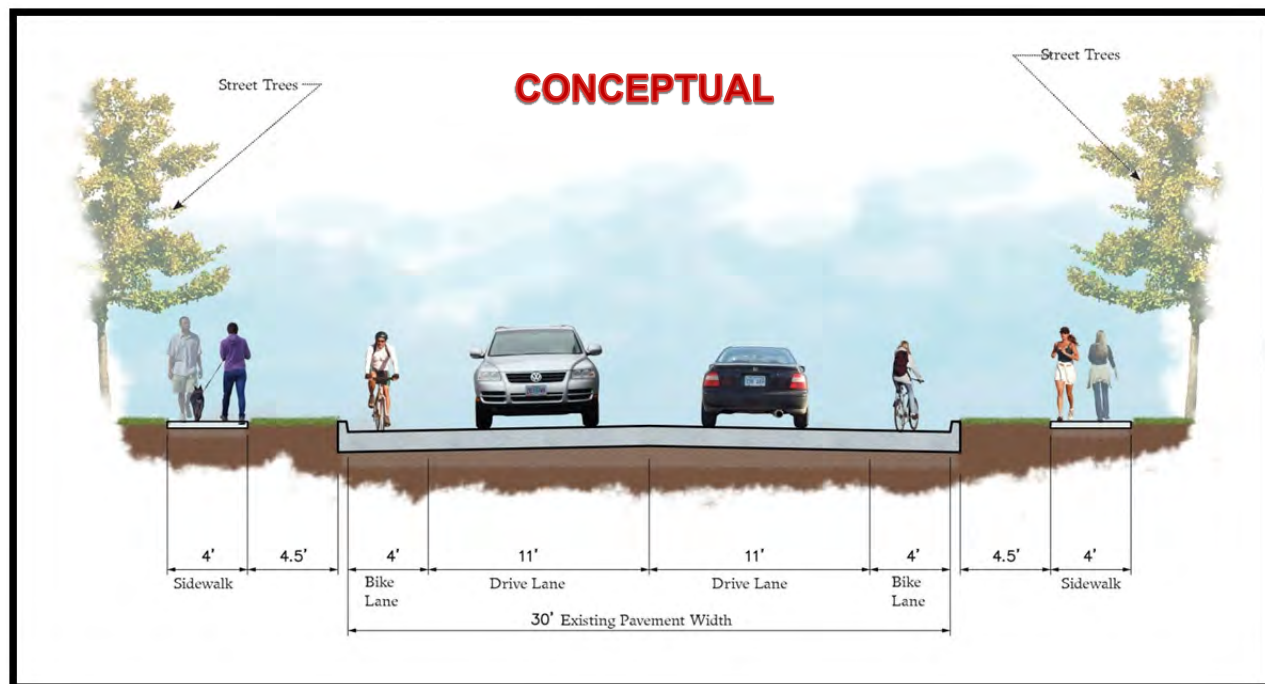


Figure 4-9: Local Roads – Option A Potential Cross-Section

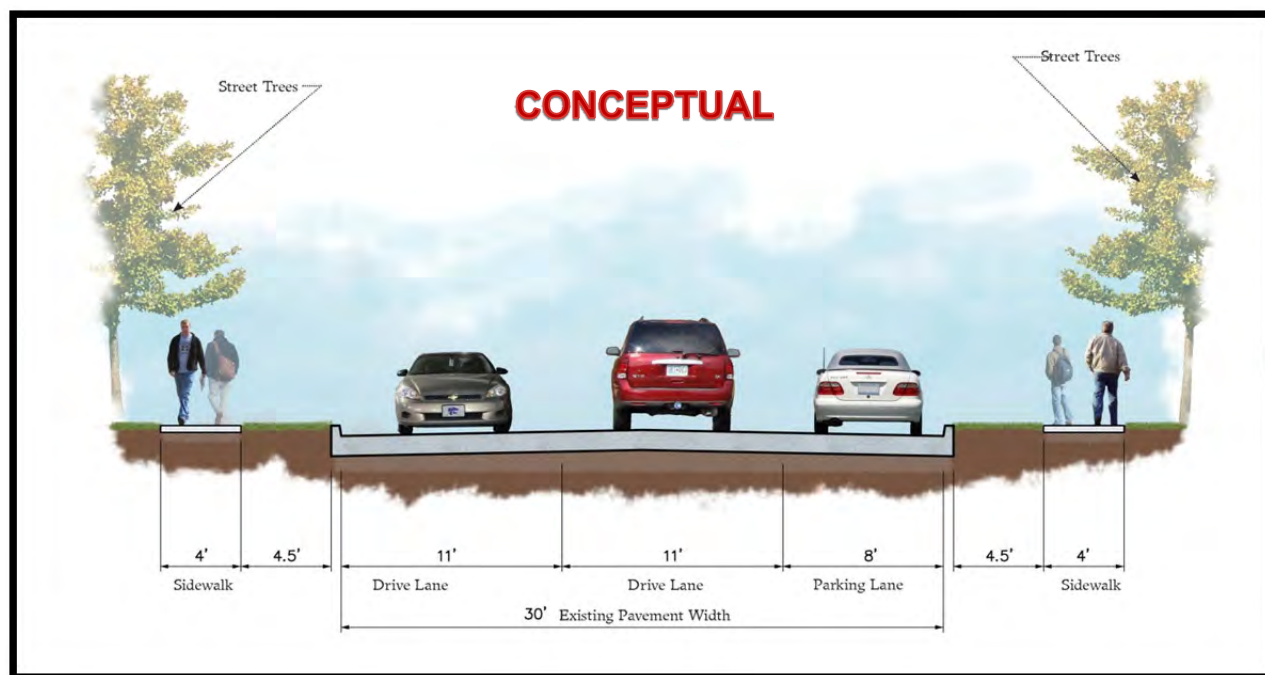


Figure 4-10: Local Roads – Option B Potential Cross-Section



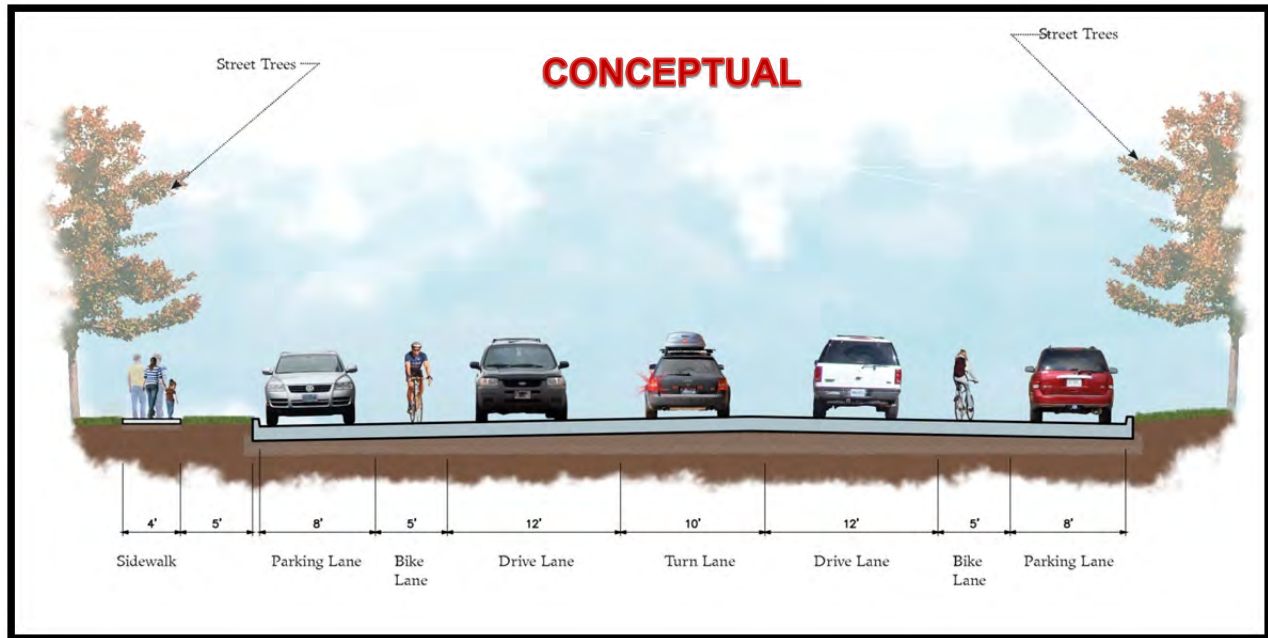


Figure 4-11: Shrewsbury Avenue – Potential Cross-Section

#### 4.2.8.4 Park Improvements/Expansion

As a part of the South County Connector project, there are opportunities for improvements to existing parks in the project area. For the River Des Peres Park, there are opportunities to expand the limits of the park to include the northern “eyelet” property, which is now identified as public roadway right-of-way. This area is currently land-locked due to the one-way road layout along River Des Peres Boulevard at this location. Also, there is no parking to access this area or the entire northern two-thirds of the park. The Build Alternatives would eliminate the one way roadway system and relocate the northbound lanes to the west, adjacent to the southbound lanes. Therefore, the proposed project would create the opportunity to use this underutilized parcel for potential park access, including a park access road, vehicular parking, and potential park facilities within the “eyelet” property.

The other two parks in the Revised Project Area include the Shrewsbury Family Aquatic Center in Shrewsbury and Deer Creek Park in Maplewood. While there would be no impacts to the park facilities within either of these parks, there is some minor right-of-way required from Deer Creek Park for the construction of the Build Alternatives. There may be opportunities to offset this acquisition through potential property transfers. Since acquisition of adjacent commercial property in proximity of this park is needed for the proposed project, likely resulting in excess uneconomical remnants, the excess property could be used to mitigate for the lost parkland. As the design process for the South County Connector progresses into the next phase, a more detailed analysis of park impacts and mitigation would be coordinated with the owners of the property. Further discussion of park impacts is included in the Section 4(f) Evaluation in Appendix H.

#### 4.2.8.5 Other Potential Private Development

Although St. Louis County would not have direct control over future private development in proximity of the proposed project area, there are areas identified within the study area that could benefit from the proposed South County Connector.

The Pace South County Associates property located at Watson Road and River Des Peres Boulevard is a site that is underutilized and has excess parking. With the proposed South County Connector located parallel to the property, this site would have greater visibility and potential for additional development on some of the outlying parcels.

Other locations with potentials for private development that would likely benefit from development of the South County Connector could include: Deer Creek Center, as previously discussed; the Sunnen properties in the vicinity of Laclede Station and Hanley Roads; which is currently undergoing redevelopment; Kenrick Plaza on Watson Road; and numerous sites along both sides of Watson Road between River Des Peres Boulevard and Laclede Station Road.

#### 4.2.8.6 Potential Public Partnerships

There are a number of potential public partnerships that would help preserve or enhance the affected community's social, economic, environmental and visual values. St. Louis County will work with the following key stakeholder groups and participating agencies in the implementation of the South County Connector.

- **Missouri Department of Transportation (MoDOT):** Interstate 44 is part of the Interstate Highway system and is maintained and operated by MoDOT. MoDOT will lead the effort to develop a full interchange at Interstate 44 and the South County Connector. MoDOT has requested that the type of interchange be determined during the final design of the South County Connector.
- **Metro:** Both of the Build Alternatives would require replacing parking at the Shrewsbury MetroLink Station. They would also likely affect the bus turn-around loop. St. Louis County will partner with Metro to minimize any disruption to the Shrewsbury MetroLink Station, including replacing any parking that would be removed for construction of the South County Connector.
- **City of St. Louis Department of Streets:** The proposed South County Connector terminates at River Des Peres Boulevard, which is owned, operated and maintained by the city of St. Louis. St. Louis County will partner with the city of St. Louis to develop a connection that optimizes traffic flow. The County will also work with the city of St. Louis and MoDOT to facilitate traffic flow between River Des Peres Boulevard and Missouri Highway 366 (Watson Road) and Missouri Route P (Mackenzie Road). The intersection of River Des Peres Boulevard and Watson Road is the first intersection immediately south of the South County Connector. Improving this intersection and the connection to Mackenzie, will distribute traffic south of the Connector. St. Louis County will also support the St. Louis Department of Streets in their efforts to secure funding for drainage and safety improvements to River Des Peres Boulevard.
- **City of St. Louis Department of Parks, Recreation and Forestry:** The County will also partner with the city of St. Louis Department of Parks, Recreation and Forestry to enhance any affects the Connector would have on River Des Peres Park. This could include converting part of the north bound lanes at the northernmost "eyelet" on River Des Peres Boulevard into parking and access to the River Des Peres Park.

- **City of Shrewsbury:** The implementation of either of the Build Alternatives will result in significant reduction in traffic volumes on local roads in the city of Shrewsbury. The County will work with the city of Shrewsbury and other stakeholders to determine options for making the city of Shrewsbury a more walkable, bikeable and livable community and to develop context sensitive solutions for the Connector.
- **City of Maplewood:** St. Louis County will partner with the city of Maplewood to develop a final design for the South County Connector that would support development opportunities for the industrial and commercial areas of Maplewood through which the Connector passes.
- **Great Rivers Greenway:** The Great Rivers Greenway has developed several multi-use trails in the vicinity of the proposed South County Connector Build Alternatives. St. Louis County will work with the Great Rivers Greenway to determine the best ways to make the final connections of the trails to each other and to the MetroLink Station.

Should the opportunity present itself, St. Louis County would consider entering into an Urban Partnership Agreement or similar agreement to seek financial support for the South County Connector and other projects in the vicinity of the Connector.

### 4.3 AIR QUALITY

#### 4.3.1 Regulatory Background and Air Quality Standards

The Environmental Protection Agency (EPA) regulates air quality under the Federal Clean Air Act of 1970 (CAA). The CAA and subsequent amendments adopted air quality standards to protect and enhance the public's health and welfare from hazardous air borne particles. The EPA delegates authority to the Missouri Department of Natural Resources (MDNR) for monitoring and enforcing air quality regulations in Missouri. The MDNR has delegated some of its authority to local municipalities having air quality control agencies. Within the South County Connector study area, the city of St. Louis Air Pollution Control Program (SLAPCP) carries out CAA initiatives in conjunction with the MDNR and EPA.

The CAA requires the adoption of air quality standards, quality control regions, and state implementation plans. The federal government established the National Ambient Air Quality Standards (NAAQS), to protect public health, safety and welfare from known or anticipated effects of sulfur dioxide (SO<sub>2</sub>), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), fine particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone, and lead. In addition to these pollutants, the State of Missouri has established air standards for hydrogen sulfide and sulfuric acid mist.

Air quality in Missouri is defined with respect to conformity with the NAAQS. The seven priority air pollutants constituting the NAAQS are ozone, CO, SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and lead. MDNR has adopted the standards for the criteria pollutants listed in Table 4-9 in its air quality program.

**Table 4-9: Criteria Pollutant Emission Standards**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Primary Standard</b>	<b>Secondary Standard</b>
Ozone	1-hour*	0.12 ppm	0.12 ppm
	8-hour	0.075 ppm	0.075 ppm
CO	1-hour	35 ppm	None
	8 hour	9 ppm	None
SO <sub>2</sub>	24-hour	0.14 ppm	None
	1-hour	0.03 ppm	None
	3-hour	75 ppb	None
NO <sub>2</sub>	Annual	53 ppb	Same as Primary
	1-hour	100 ppb	None
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24-hour	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
Lead	3-month	0.15 µg/m <sup>3</sup>	Same as Primary
	quarterly	1.5 µg/m <sup>3</sup>	Same as Primary

\* No longer applies to any areas in Missouri.

ppb – parts per billion

ppm - parts per million

µg/m<sup>3</sup> - micrograms per cubic meter

Source: Missouri 10 CSR 10-6.010 Ambient Air Quality Standards; July 31, 2011; <http://www.dnr.mo.gov/env/esp/aqm/standard.htm>

Transportation can contribute to all seven of the regulated NAAQS pollutants. Transportation Conformity, as required under the CAA, ensures that federally funded or approved transportation plans, programs, and projects conform to the air quality objectives established in State Implementation Plans (SIPs). MoDOT is responsible for implementing the conformity regulation in nonattainment and maintenance areas.

#### **4.3.2 Affected Environment**

The EPA and MDNR classify geographic regions of Missouri as having air quality better or equal to (attainment) or worse than (non-attainment) these standards. The South County Connector study area is located within the St. Louis region designated as non-attainment area for 8-hour ozone. Ozone is formed when its precursors, NO<sub>x</sub> and VOC, react in sunlight.

There are 13 air monitoring stations within the St. Louis, Missouri area which are operated by MDNR. Among these, the Arnold West monitoring site (located in northern Jefferson County) is the closest to the South County Connector study area and can be used to describe existing air quality of the area. The 0.075 parts per million (ppm) ozone standard was set in 2011 and MDNR is in the process of designating areas attainment or non-attainment with this standard. Since the St. Louis area is already considered non-attainment with the previous 8-hour ozone standard (0.08 ppm), it is likely that this area will continue to be non-attainment under the new standard.

A review of the ozone monitoring data from the Arnold West site indicates that in general, the 3-year average of the 4<sup>th</sup> daily maximum 8-hour ozone levels<sup>31</sup> does not exceed the NAAQS. Since 2008, there have been only 10 days where ozone levels have exceeded that standard.<sup>32</sup>

In terms of general air pollutants emitted within the South County Connector study area, volatile organic compounds (VOCs), an ozone precursor, are emitted from a variety of sources including cars and trucks, chemical plants, oil refineries, factories, as well as other industrial activities and consumer and commercial products such as paints and solvents. These emissions occur as a result of incomplete combustion of vapors and fossil fuels escaping from various compounds. NO<sub>x</sub>, another ozone precursor, is primarily produced during the combustion of fossil fuels by motor vehicles and power plants and other industrial utility operations. SO<sub>2</sub> is primarily produced by point sources such as power plants and industrial operations.

Three basic types of sources of NO<sub>x</sub> and VOC emissions exist in the South County Connector study area: mobile sources (cars and trucks), area sources (light industry such as asphalt plants), and major point sources in the area. The majority of the SO<sub>2</sub> emissions are from major point sources (i.e., Laclede Gas, Sunnen Corporation).

### **4.3.3 Environmental Consequences**

#### **4.3.3.1 No Build Alternative**

The volume of traffic projected to occur as a result of the No Build Alternative would contribute to increased emissions resulting in lower air quality within the study area. The volume of traffic projected within the study area in 2040 would result in unacceptable levels of service, causing increased congestion and travel delay. Traffic congestion and delays contribute to increased idling times by vehicles at intersections and lower travel speeds along arterial and collector streets, which also result in lower air quality.

#### **4.3.3.2 Build Alternatives**

The *Regional Transportation Plan 2040* (RTP 2040), approved by the East-West Gateway Council of Governments (EWGCOG) on June 29, 2011, includes the addition of a new interchange at Interstate 44 and Shrewsbury Avenue, during the timeframe of 2031-2040. The proposed Interstate 44/South County Connector interchange would take the place of this interchange. To approve the RTP 2040, the EWGCOG conducted an air quality conformity analysis for the projects included in the RTP 2040, as presented in the *Air Quality Conformity Determination and Documentation (8-Hour Ozone and PM<sub>2.5</sub>)* for the *Regional Transportation Plan 2040* and the *2012-2015 Transportation Improvement Program* (FY 2012-2015 TIP, also completed in June 2011). According to the analysis conducted, the projects and programs included in RTP 2040 were found to be in conformity with the requirements of the CAA, the relevant section of the Final Conformity Rule 40 CFR Part 93, and the Missouri State Regulations 10 CSR 10-5.480. Both RTP 2040 and FY 2012-2015 TIP conform to the SIP adopted by the MDNR. Therefore, the Interstate 44 interchange was determined to not have an effect on regional air quality. No additional air quality modeling will be conducted for the proposed Interstate 44 interchange location.

Although not included in the RTP 2040, the roadway improvements that are part of the South County Connector would connect the interchange to the local roadway system, providing additional roadway capacity and improving levels of service at existing intersections; resulting in

<sup>31</sup> In March 2008, USEPA revised the ozone standard to set it at a level of 0.075 ppm averaged over an 8-hour period. This standard is met at an air quality monitor when the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.075 ppm.

<sup>32</sup> MNDR; Environmental Services Program, Arnold West; 2012. <http://www.dnr.mo.gov/env/esp/agm/arnold.htm>.

the removal of traffic from the congested local roadway system. By providing this additional capacity, improving levels of service at intersections, and reducing travel time and distance within the study area, construction of the South County Connector would contribute to lower emissions from transportation sources within the study area; therefore improving air quality.

The South County Connector roadway improvements would result in lower emissions and improved localized air quality. New intersections would be created with existing arterial/collector streets that would provide improved levels of service compared to the existing street intersections they would replace. The capacity provided by these intersections would improve traffic flow and reduce vehicle idling, therefore, reducing emissions at these intersections. A new interchange at Interstate 44 and the proposed South County Connector would divert trips from a number of existing crossings over Interstate 44, resulting in lower emissions at interchanges outside of the study area.

Construction activities may result in short-term impacts on air quality including direct emissions from construction equipment and trucks, fugitive dust<sup>33</sup> emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on local streets. These impacts would be temporary, and would be localized to the area of construction and its immediate vicinity. Fugitive dust, suspended particulates, and emissions could occur during ground excavation, material handling and storage, movement of equipment at the site, and transport of material to and from the site. Fugitive dust could be a problem during periods of intense activity and would be aggravated by windy and/or dry weather conditions. The amount of emissions would depend on the type and number of equipment used.

Contractors will be required to comply with all applicable local, state, and federal air pollution regulations. All contractors will need to obtain a Construction and Operating Permit from the St. Louis County Department of Health and Air Pollution Control Program, in accordance with St. Louis County Ordinance 612.110.

*Mobile Source Air Toxics* - Controlling air toxics emissions became a national priority with the passage of the CAA. In 2007, the EPA published a rule on the Control of Hazardous Air Pollutants from Mobile Sources, identifying a number of compounds emitted from mobile sources, seven of which are considered as priority mobile source air toxics (MSATs) by the FHWA. The 2007 EPA rule requires nationwide controls that will dramatically decrease MSAT emissions through the development and use of cleaner fuels and cleaner vehicle engines. On September 30, 2009, the FHWA issued an Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents. The guidance was issued to address these recent regulatory changes and to update stakeholders on the status of scientific research on air toxics.

As outlined in the FHWA's interim guidance, a qualitative analysis provides a basis for identifying the potential differences among MSAT emissions, if any, from the various alternatives under consideration. The following qualitative assessment is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*.

For the Build Alternatives considered, the amount of MSAT emitted would be proportional to the vehicle miles travelled (VMT) within the study area to travel from Hanley Road to Watson Road. Because the VMT estimated for the No Build Alternative is higher than either of the Build Alternatives, due to the use of existing local roads and intersections, higher levels of MSAT would be generated under the No Build Alternative than under either of the Build Alternatives.

<sup>33</sup> Particles lifted into the ambient air caused by man-made and natural activities such as the movement of soil, vehicles, equipment, blasting, and wind.

For either Build Alternative, emissions would likely be the same or lower in the design year (2040) compared to the estimated opening year (2020) as a result of implementation of EPA's national programs to use cleaner fuels and manufacture cleaner engines. Annual MSAT emissions are projected to be reduced by 72 percent from 1999 to 2050. With the forecasted increase in traffic volumes in 2014, it is possible that localized areas may experience increases or decreases in MSAT emissions, particularly along Laclede Station Road, Big Bend Boulevard, Shrewsbury Avenue, and Lansdowne Avenue. However, if these increases occur, they too would be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

#### **4.3.4 Mitigation Measures**

Temporary emissions resulting from construction would be minimized by taking reasonable precautions to prevent fugitive dust from becoming airborne. Controlling fugitive dust emissions would require development of a construction mitigation plan for implementation during construction. The specific actions described in the construction mitigation plan may include:

- Spraying exposed soil with water or other suppressant to reduce emissions of PM<sub>10</sub> and increase deposition of particulate matter.
- Phasing construction to keep disturbed areas to a minimum.
- Using wind fencing to reduce disturbance to soils.
- Wetting down materials to be transported or using covered trucks to transport materials and wastes.
- Promptly cleaning up spills of transported material on public roads.
- Scheduling work tasks to minimize disruption of vehicle traffic on local streets.
- Locating construction equipment and truck staging areas away from sensitive receptors, as practical, and in consideration of potential effects on other resources.
- Providing wheel washers to remove particulate matter that would otherwise be carried offsite by vehicles to decrease deposition of particulate matter on area roadways.

### **4.4 NOISE**

#### **4.4.1 Background**

Noise may be defined as unwanted sound. Noise and sound are physically the same, but the difference is in the opinion of the receiver. A sound is produced by a source that has induced vibrations in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward in all directions from the source; much like ripples after a stone is thrown into a pool of water. The result of the air movement is sound waves that radiate in all directions and may be reflected and scattered.

Sound is measured by its pressure or energy in terms of decibels (dB). The dB is based on a logarithmic scale and therefore, is not directly additive as in a linear scale. For example, if a sound of 60 dB is added to another sound of 60 dB, the total is a 3 dB increase to 63 dB, not a doubling to 120 dB. The human ear can perceive a wide range of sound. At the low end of the dB scale, very faint sounds of less than 10 dB can be heard, yet at the high end of the dB scale extremely loud sounds of more than 100 dB can also be heard. Except in carefully controlled laboratory experiments, a 1 dB change in sound levels cannot be perceived by humans. Outside



the laboratory, a 3 dB change in sound levels is considered a just-perceivable difference. An increase of 10 dB is usually perceived as being twice as loud.

The effects of noise/sound on people can be listed in three general categories: 1) subjective effects of annoyance, nuisance and dissatisfaction; 2) interference with activities such as speech, sleep, and learning, and 3) physiological effects such as startling and hearing loss.

Traffic-noise levels are typically calculated in A-weighted decibels (dBA). A-weighting de-emphasizes lower frequency sounds below 1,000 hertz (1 kHz) and higher frequency sounds above 4 kHz. A-weighting is the measure most used for traffic and environmental noise throughout the world, as it provides a high degree of correlation with human annoyance and health effects.

The actual impact of sound is not a function of loudness alone. The time of day during which sound occurs and the duration of the sound are also important. In addition, most sound that lasts for more than a few seconds is variable in its intensity. The sound descriptor used for this study is the Leq. The Leq is the equivalent steady-state sound level which, in a stated period, contains the same acoustical energy as the time-varying sound level during the same period. The Leq (h) is the energy-average of the A-weighted sound levels occurring during a 1-hour period, in decibels (i.e., a 1-hour Leq).

#### **4.4.2 Noise Analysis Methodology**

FHWA procedures for highway noise analysis and abatement contained in 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, were used to identify and evaluate potential noise impacts associated with the South County Connector. Evaluation of the traffic-noise impacts expected from construction of a road involves the following:

- Identification of existing activities and developed lands that may be affected by traffic noise from the roadway
- Prediction of traffic-noise levels with and without construction of the proposed project
- Determination of existing noise levels
- Determination of traffic-noise impacts
- Feasibility and reasonableness of noise abatement measures for reducing or eliminating noise impacts

The FHWA has determined Noise Abatement Criteria (NAC) for different land uses (i.e., activity categories) as described in Table 4-10. For the purpose of traffic noise analysis, the use of a property located adjacent to a transportation improvement is classified according to the human activities that occur or are expected to occur within the property boundaries. MoDOT's *Policy Statement on Highway Noise Abatement* defines "approach" as 1 dBA less than the NAC.

**Table 4-10: Noise Abatement Criteria, Hourly A-Weighted Sound Level-Decibels (dBA)**

Activity Category	Leq (1 Hour)	Description of Activity Category
A	57 dBA (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the lands are to continue to serve their intended purpose.
B	67 dBA (exterior)	Exterior areas of single-family and multi-family domiciles.
C	72 dBA (exterior)	Exterior areas of non-residential land uses including active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools and television studios.
D	52 dBA (interior)	Interior areas of the following land uses: Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools and television studios.
E	72 dBA (exterior)	Exterior areas of developed lands that are less sensitive to highway traffic noise. These land uses include: Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing.
G	--	Undeveloped lands that are not permitted for development.

Source: MoDOT Policy Statement on Highway Noise Abatement, effective July 13, 2011.

[http://epg.modot.org/index.php?title=127.13\\_Noise](http://epg.modot.org/index.php?title=127.13_Noise)

Noise abatement is considered when a traffic-noise impact is predicted.<sup>34</sup> Traffic noise impacts occur when the predicted existing or future highway traffic noise levels approach or exceed the NAC, or when predicted existing or future highway traffic noise levels substantially exceed the existing highway traffic noise level, even though the predicted level may not exceed the NAC. The term “approach” is considered to be 1 dBA less than the appropriate NAC. Therefore, a sensitive noise receptor is considered affected if the noise level is predicted to be 66 dBA or higher for exterior areas of residential land uses. MoDOT defines a “substantial increase” as an increase of 15 dBA or more above the existing noise level.

#### 4.4.3 Affected Environment

The South County Connector study area is composed of a mix of residential, industrial, commercial, and recreational land uses. The majority of the noise-sensitive receptors are located within existing neighborhoods that would be affected by traffic noise from the South County Connector. Ambient (existing) noise levels were taken at representative receptor locations within these neighborhoods and sensitive land uses. The measurement point locations

<sup>34</sup> The term predicted refers to modeled values. FHWA-HEP-10-025, *FHWA Highway Traffic Noise: Analysis and Abatement Guidance*, December 2011.

were used to determine existing sound levels within eight noise study areas (NSA) found along the project route. The locations of the ambient noise readings and NSA locations are described below and depicted in Exhibits 4-5 and 4-6.

- **South Hanley Road (MP1)** – This measurement point represents the area currently being redeveloped at the north end of the study area and north of the Union Pacific Railroad line. The parcels were vacant at the time the noise measurements were taken. Since the measurements were taken, this area has been redeveloped into a Mini Cooper dealership.
- **Deer Creek Park (MP2)** – This measurement point is located along Laclede Station Road just south of the Union Pacific Railroad line. The existing traffic along Hanley Road/Laclede Station Road is the dominant source of noise for the park.
- **Marshall Avenue (MP3)** - Located in the northern portion of the study area, this residential area consists of primarily single-family houses. The area is separated from the proposed alignment of the SCC by the riparian tree cover along Deer Creek and includes the existing Deer Creek walking and biking trail.
- **Sussex Avenue (MP4)** – This representative receptor is located in the northeast portion of the study area. The neighborhood this measuring point represents is separated from the proposed alignment of the South County Connector by the MetroLink rail line. This neighborhood contains primarily single and multi-family houses.
- **Wabash Ave (MP5)** - This single-family neighborhood is located east of the study area and east of the proposed alignment of the South County Connector and the MetroLink rail line.
- **Melbourne Avenue/St. Vincent Avenue (MP6 and MP7)** – This residential neighborhood is located south of the proposed I-44/South County Connector interchange and west of the MetroLink rail line and the BNSF Railroad.
- **River Des Peres (MP8)** - This measurement point is representative of the single and multi-family residential area east of the River Des Peres and just outside of the study area.
- **River Des Peres Park (MP9)** - This measurement point is representative of the single and multi-family residential area just west of River Des Peres Boulevard and River Des Peres Park and Trail. This area is located immediately west of the proposed alignment of the South County Connector.

Ambient sound level measurements were taken between 4:30 p.m. and 6:30 p.m. on February 23, 2012, and between 6:45 a.m. and 8:45 a.m. on February 24, 2012. Supplemental measurements were taken between 4:30 p.m. and 5:00 p.m. on February 24, 2012 to capture peak traffic in the area.

The average existing measured noise levels are presented in Table 4-11. The land use activity category and applicable NAC are also noted in Table 4-11 for each measurement point. Extraneous noises were minimal with highway and local roadside traffic being the dominant noise source. The average measured sound level at each measurement point was used to

calibrate the noise model. The last column in Table 4-11 indicates the average modeled value used in the noise analysis.

**Table 4-11: Average Measured and Modeled Existing Sound Levels**

Noise Study Area	Measurement Point	Activity Category		Average Measured	Average Modeled
		*	NAC	L <sub>eq</sub> Sound Level (dBA) (1)	L <sub>eq</sub> Sound Level (dBA)
NSA 1	MP1	E	72	68.9	65.5
NSA 2	MP2	C	72	68.6	69.7
NSA 3	MP3	B	67	67.3	72.0
NSA 4	MP4	B	67	55.6	53.3
NSA5	MP5	B	67	57.3	58.0
NSA 6/7	MP6	B	67	61.6	64.2
	MP7	B	67	56.7	61.3
NSA 8	MP8	B	67	55.8	54.4
NSA 9	MP9	B/C	67/72	64.3	66.1

\* See Activity Category description in Table 4-10

Source: Burns & McDonnell Analysis, 2012

#### 4.4.4 Environmental Consequences

The impacts of traffic noise resulting from implementation of the alternatives considered were evaluated using FHWA's Traffic Noise Model 2.5 (TNM), existing and proposed roadway location and alignments, existing traffic volume data, and projected future (2040) traffic volumes for the worst traffic noise hour. A detailed description of the noise analysis methodology and results is presented in Appendix D.

The results of the noise analysis are summarized in Table 4-12. Exhibits 4-5 and 4-6 present these results for Build Alternative 1 and Build Alternative 2, respectively.

**Table 4-12: Existing (2012) and Predicted Future (2040) Traffic Noise Levels (dBA, Leq(h))**

Noise Study Area	Sound Measuring Point	Location of Representative Sensitive Receptor	NAC	Average Modeled Existing Sound Levels (dBA)	Modeled Future Noise Levels (2040)					
					No Build Alternative		Build Alternative 1		Build Alternative 2	
					Sound Level (dBA)	Change in dBA*	Sound Level (dBA)	Change in dBA*	Sound Level (dBA)	Change in dBA*
NSA 1	MP1	South Hanley Road	72	65.5	69.1	3.6	<b>71.2</b>	5.7	<b>71.2</b>	5.7
NSA 2	MP2	Deer Creek Park	72	69.7	<b>72.9</b>	3.2	66.4	-3.3	67.2	-2.5
NSA 3	MP3	Marshall Avenue/Key West Avenue	67	<b>72.0</b>	<b>72.4</b>	0.4	<b>71.7</b>	-0.3	<b>72.7</b>	0.7
NSA 4	MP4	Sussex Avenue	67	53.3	54.8	1.5	63.7	10.4	<b>66.4</b>	13.1
NSA 5	MP5	Wabash Avenue	67	58.0	58.8	0.8	57.0	-1.0	57.1	-0.9
	MP6	Melbourne Avenue	67	64.2	64.9	0.7	64.0	-0.2	64.1	-0.1
NSA 6/7	MP7	St. Vincent Avenue	67	61.3	62.1	0.8	63.7	2.4	63.6	2.3
NSA 8	MP8	River Des Peres	67	54.4	56.6	2.2	56.0	1.6	55.9	1.5
NSA 9	MP9	River Des Peres Park	67/72**	<b>66.1</b>	65.9	-0.2	<b>73.0</b>	6.9	<b>73.0</b>	6.9

\* Comparison of future (2040) modeled sound level to existing (2012) average modeled sound level.

\*\*NAC Category B impact level is 67 and NAC Category C impact level is 72

**BOLD** indicates values that approach or exceed the NAC

Source: Burns & McDonnell Analysis, 2012

#### 4.4.4.1 No Build Alternative

As presented in Table 4-12, under existing modeled conditions, the NAC is approached or exceeded at two of the measurement locations within the South County Connector study area - the residential neighborhood along Marshall Avenue/Key West Avenue (MP3) and the residential area west of River Des Peres Park (MP9). Based on traffic volumes forecast (predicted) to occur in 2040 along existing roadways, the Deer Creek Park (MP2) and Marshall Avenue/Key West Avenue (MP3) areas would experience an increase in noise levels that would exceed the NAC. Under future conditions, noise levels in the River Des Peres Park (MP9) area would slightly decrease to a value below the NAC, while the NAC would be exceeded along Deer Creek Park (MP2). Noise increases under the No Build Alternative would range from 0.4 dBA to 3.6 dBA. Based on the analysis, the No Build Alternative would not result in a substantial increase in noise.

#### 4.4.4.2 Build Alternatives

Under both Build Alternatives, a new roadway would be constructed in proximity to sensitive noise receptors. Some locations would experience an increase in noise levels as a result of vehicle traffic, while other locations would actually experience a slight decrease in the predicted noise level. Based on the analysis summarized in Table 4-12, receptors located near South Hanley Road (MP1), Sussex Avenue (MP4), Wabash Avenue (MP7), River des Peres (MP8), and River Des Peres Park (MP9) would experience a general increase in predicted noise levels in the future with development of the South County Connector. The increase along Sussex Avenue would be attributable to the location of the new intersection of the South County Connector and Big Bend Boulevard being located closer to that neighborhood. The MetroLink line is also located on structure near that intersection, so it would not serve as a barrier to noise generated at the intersection. The increase at the other locations is the result of a new multi-lane roadway carrying higher traffic volumes being located in proximity to those neighborhoods.

Receptors near the measuring points at Deer Creek Park (MP2), Melbourne Avenue (MP5), and St. Vincent Avenue (MP6) would experience a general decrease in predicted noise levels. The decrease at Deer Creek Park would be the result of locating the South County Connector farther east than existing South Hanley Road/Laclede Station Road and transfer of approximately half of the traffic traveling along Laclede Station Road to the South County Connector. Traffic normally traveling along Laclede Station Road and using Marshall Avenue to connect to Big Bend Boulevard is predicted to use the South County Connector. The existing riparian corridor along Deer Creek would provide minimal attenuation of traffic noise, resulting in noise levels near current modeled values in the vicinity of Marshall Avenue/Key West Avenue.

Receptors located near the measuring points at Melbourne (MP6) and St. Vincent Avenues (MP7) are affected by the traffic noise generated by Interstate 44. Traffic using the proposed interchange with the South County Connector and the location of the South County Connector to the east of the BNSF rail line influences the predicted noise levels in this area.

Under Build Alternative 1, the NAC would be approached or exceeded at receptors located near the measuring points at South Hanley Road (MP1), Marshall Avenue/Key West Avenue (MP3), and River Des Peres Park (MP9). Noise levels at two of these locations currently approach or exceed the NAC. The largest increase in the future noise level of 10.4 dBA would occur at Sussex Avenue. This would not be considered a substantial increase.

Under Build Alternative 2, the NAC would be approached or exceeded at receptors located near South Hanley Road (MP1), Marshall Avenue/Key West Avenue (MP3), Sussex Avenue (MP4),

and River Des Peres Park (MP9). Noise levels at two of these locations currently approach or exceed the NAC. The largest increase in the future noise level of 13.1 dBA would occur at Sussex Avenue (MP4). This would not be considered a substantial increase.

In accordance with MoDOT Noise Policy,<sup>35</sup> an analysis of potential impacts to sensitive receptors by Activity Category (as defined in Table 4-10) was completed. This analysis was conducted to determine the number of sensitive receptors that may approach or exceed the NAC and/or experience a substantial increase of 15 dBA or greater. For non-residential receptors, the width of the average residential property frontage within the study area was used to determine the equivalent number of sensitive receptors for applicable non-residential land uses. As an example, under a traditional analysis, a 100 acre city park would be counted as one sensitive receptor, the same as a single family residence. The park, on any given day, can host activities that may be sensitive to traffic noise that are attended by a large number of people. Using this method, these special and sensitive land uses are given greater weight in the noise impact analysis evaluation.

Table 4-13 summarizes the results of this analysis. Based on this analysis, there are no sensitive receptors that would experience a substantial increase in noise levels, but there are several receptors located in Activity Category B (residential) and C (parks) that would approach or exceed the NAC, as presented in Table 4-13.

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<sup>35</sup> MoDOT Engineering Policy Guide, Section 127.13 Noise, July 13, 2011. [http://epg.modot.org/index.php?title=127.13\\_Noise](http://epg.modot.org/index.php?title=127.13_Noise)



**Table 4-13: Noise Impacts by NAC Activity Category**

<b>Activity Category*</b>	<b>NAC</b>	<b>Study Area Land Uses</b>	<b>Build Alternative 1</b>	<b>Build Alternative 2</b>
A	57 dBA	None	Not applicable	Not applicable
B	67 dBA	Single and Multi-family residences	<b>Approach or exceed NAC</b> 43 receptors (SF) 7 receptors (MF) <b>Substantial increase - none</b>	<b>Approach or exceed NAC</b> 55 receptors (SF) 13 receptors (MF) <b>Substantial increase - none</b>
C	72 dBA	Deer Creek Park, Deer Creek Greenway, River Des Peres Park	<b>Approach or exceed NAC</b> River Des Peres Park – 15 receptors <b>Substantial increase - none</b>	<b>Approach or exceed NAC</b> River Des Peres Park – 15 receptors <b>Substantial increase - none</b>
D	52 dBA (interior)	None	Not applicable	Not applicable
E	72 dBA	Exterior areas of developed lands that are less sensitive to highway traffic noise. Commercial areas with exterior uses.	<b>Approach or exceed NAC</b> Mini Cooper Dealership – 5 equivalent receptors <b>Substantial increase - none</b>	<b>Approach or exceed NAC</b> Mini Cooper Dealership – 5 equivalent receptors <b>Substantial increase - none</b>
F	NA	Deer Creek Center, Big Bend Industrial Court, Laclede Gas, Carr Lane Manufacturing, MetroLink Shrewsbury Station, St. Louis Tag Co., Overhead Door, Shrewsbury City Works Yard, Warning Lites, Glorious Garden Storage, etc.	No evaluation required	No evaluation required

\* See Activity Category description in Table 4-10

Note: A 100-foot average residential lot frontage was used for the analysis.

For non-residential uses, the length of property frontage within the respective noise contour was used to determine the equivalent number of noise receptors.

Source: Burns & McDonnell Analysis, 2012

#### 4.4.4.3 Construction Noise

To reduce the impacts of construction noise, MoDOT has special provisions in the construction contract which requires that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment is required to have mufflers constructed in accordance with the equipment manufacturer's specifications. Further, MoDOT monitors project construction noise and requires noise abatement in cases where the criterion is exceeded. The

major construction elements of the project are expected to be demolition, earthmoving, hauling, grading, and paving. General construction noise impacts for passersby and individuals living or working near the project can be expected particularly from demolition, earthmoving and paving operations. Noise generated by construction equipment would vary greatly depending on the equipment type, mode, duration of operation and specific type of work in progress. Considering the short-term nature of construction noise, impacts are not expected to be substantial.

During construction, measures would need to be implemented by the contractor to ensure construction noise levels do not exceed the limitations outlined under the County Code Chapter 625 Noise Control Code for areas within St. Louis County, and the Noise Ordinance, Chapter 97 Noise Control, for areas located within the city of St. Louis. To minimize the effects of construction noise, construction activities would most likely occur within normal daylight hours.

#### 4.4.5 Noise Abatement Analysis

Where potential noise impacts were identified, noise abatement was considered and evaluated for feasibility and reasonableness. When noise abatement measures are being considered, every reasonable effort is made to obtain substantial noise reductions.

Per the MoDOT Noise Policy,<sup>36</sup> feasibility is the ability to provide abatement in a given location considering acoustic and engineering limitations of the site. More specifically, in order for noise abatement to be feasible, the following criteria are considered:

- Noise abatement measures must provide a benefit of a minimum of 5 dBA for 67 percent of first-row, impacted receptors.
- The noise wall must not interfere with normal access to the property.
- The noise wall must not pose a traffic safety hazard.
- Other engineering considerations for abatement feasibility include topography, drainage, maintenance, and presence of other noise sources.
- For reasons of safety (i.e. wind load and clear space concerns), the noise wall must be 20 feet or less in height above normal grade.

This feasibility analysis was conducted for each area where impacts were predicted. The analysis for each impacted area is described below.

- **NSA 1 (impacted under both Build A alternatives):** This commercial property consists of a Mini Cooper dealership where activities associated with car sales are expected to occur outdoors. However, any abatement option for this impacted area would reduce visibility for patrons for the dealership, which is undesirable for commercial industries. Further, access to this property would be impacted if noise abatement were implemented.
- **NSA 3 (impacted under existing, no build, and both Build Alternatives):** This residential area is separated from the proposed alignment by Deer Creek, the Deer Creek Trail, and a two-lane roadway (Marshall Avenue). Since existing sound levels exceeded the NAC for this residential area, an effective sound wall would have to be

<sup>36</sup> MoDOT Engineering Policy Guide, Section 127.13 Noise, July 13, 2011. [http://epg.modot.org/index.php?title=127.13\\_Noise](http://epg.modot.org/index.php?title=127.13_Noise)

built between the residences and Marshall Ave. However, since the majority of these first-row receptors have driveways facing Marshall Ave, any feasible wall would prevent homeowner access to their driveways. Thus, a barrier would not be feasible for this area. Noise abatement between the proposed roadway and the Deer Creek Trail would also not be feasible since this area is located within the Deer Creek floodway.

- **NSA 4 (impacted under Build Alternative 2):** This residential area is separated from the proposed alignment by the MetroLink rail line. The peak sound levels when the MetroLink trains passed by were measured to be 91 dBA, with a 5 minute  $L_{eq}$  of 61.9. The MetroLink tracks are also raised above ground level, providing an existing barrier between the alignment and the nearest receptors. Because of these factors, a barrier is not feasible for this area.
- **NSA 9 (impacted under both Build Alternatives):** This area consists mostly of multi-family residences abutting both alignments. This NSA area also represents the River Des Peres Park and Trail. In order to maintain access to the multi-family apartments, and because of the elevation changes between the proposed route and the multi-story residences, breaking the line of sight between areas of outdoor recreational use and the proposed alignments would be difficult and would require exceptionally high barriers. Further, noise abatement between the proposed roadway and Deer Creek Park and Trail would restrict access to the park. Therefore, for these reasons noise abatement in this area would not be feasible.

Because barriers for the impacted areas do not meet MoDOT's feasibility requirement, further investigation of noise barriers for reasonableness is not required for the project.

At this time, MoDOT is not part of a FHWA-approved Quiet Pavement Pilot Program. Therefore, use of quieter pavements is not an acceptable Federal-aid noise abatement measure to be considered for this project. The use of vegetation or landscaping to attenuate noise is not an acceptable Federal-aid noise abatement measure. For vegetative cover to be effective in appreciable attenuating noise, a dense evergreen buffer, a minimum of 100 feet in depth is required.<sup>37</sup>

## 4.5 WATER RESOURCES/WATER QUALITY

### 4.5.1 Affected Environment

Water resources for this study include any named or unnamed rivers, streams, and lakes in the study area. Wetlands and floodplains are associated with water resources, but are discussed in separate sections in this EIS. Water quality is measured by the ability of water resources to support beneficial uses, both by humans and wildlife. Waters of the State of Missouri are classified for the protection of aquatic life, livestock and wildlife watering, and fish consumption by humans.

Section 305(b) of the Federal Water Pollution Control Act of 1972, generally referred to as the Clean Water Act, requires states to report to the U.S. Congress and U.S. Environmental Protection Agency (USEPA) on the quality of the surface and groundwater resources of the state. The 305(b) report is submitted once every two years and must explain how the resource quality of water is determined in terms of the degree to which predefined beneficial uses (i.e., designated uses) of those waters are attained (i.e., supported). When any designated use for

<sup>37</sup> MoDOT Engineering Policy Guide, 127.13.7 Analysis of Noise Abatement Measures; October 18, 2011.

any water body is not fully supported (i.e., impaired), the state must report potential reasons (causes and sources) for the impairment. The Missouri Department of Natural Resources (MDNR) is responsible for producing the biannual 305(b) report and 303(d) Impaired Waters Listings report. The MDNR defines the categories of designated/beneficial uses and establishes a set of water quality criteria for each use (10 CSR 20-7). Missouri has established 15 separate categories, and each body of water may have more than one beneficial use associated with it.

The MDNR estimates that 60 percent of its stream miles and 90 percent of its lakes have been assessed; the assessed waterbodies are categorized as 'Full Support of Uses' or 'Non Supporting of Uses'. Of the amount assessed, approximately 17 percent of the stream miles and 48 percent of the lakes are classified as Non-Supporting. In addition, under the state's Water Quality Standards, water resources are evaluated to determine if eligible for inclusion as an Outstanding National Resource Water (ONRW) or Outstanding State Resource Water (OSRW). These designated waters have been determined to contain national recreational and ecological significance or as a high quality water of the state with significant aesthetic, recreational, or scientific value.

The project study area lies within the Cahokia-Joachim watershed (HUC Region 07140101) and contains portions of Deer Creek and River des Peres. Neither waterway is listed as an Outstanding National or State Resource Water. Deer Creek has not been assessed by the MDNR, but is identified on the Other Potentially Impaired Waters list due to habitat degradation. The River des Peres has not been assessed within the project area, but has been listed as impaired in an assessed section downstream of the project study area. The River des Peres was listed for impairment due to chloride concentrations in 2006 and 2008 and for low dissolved oxygen in 2010. Beneficial uses associated with Deer Creek and River des Peres include: Livestock and Wildlife Watering, Protection of Warm Water Aquatic Life and Human Health-Fish Consumption, and Secondary Contact Recreation. Deer Creek has one additional beneficial use: Whole Body Contact Recreation. The beneficial use within the River des Peres that is classified as non-supporting is the Protection of Warm Water Aquatic Life and Human Health-Fish Consumption Use.

The impairments in the River des Peres downstream of the study area have triggered the need for a Total Maximum Daily Load (TMDL) report for the waterbody. A TMDL report sets the pollutant reduction goal necessary to improve state-listed impaired waters. It determines the load, or quantity, of any given pollutant that can be allowed in a particular water body. A TMDL must consider all potential sources of pollutants, whether point or non-point. It also takes into account a margin of safety, which reflects scientific uncertainty, as well as the effects of seasonal variation. After the reduced pollutant loads have been determined, an implementation plan is developed for the watershed describing the actions necessary to achieve the goals. The TMDL has not been established currently; however, the Deer Creek Watershed Alliance (Alliance) released the *Deer Creek Watershed Plan* in 2011. Deer Creek is a part of the River des Peres Watershed, and the Alliance was formed to approach the problems of the river on a sub-watershed basis.

The *Deer Creek Watershed Plan* identified pollutant concerns such as low dissolved oxygen, high total suspended solids, high E. Coli counts, high chloride levels, elevated phosphorus levels, and industrial pollutants. The watershed plan identifies potential sources and creates management objectives in order to reduce pollutant loading. Communities participating with the DCWF include the cities of Brentwood, Clayton, Frontenac, Ladue, Huntleigh, Maplewood, Rock Hill, University City, and Webster Groves.

Deer Creek and River des Peres exist within a highly urbanized environment. Both waterways have been significantly altered from pre-settlement conditions. The waterways have been channelized and generally lack any natural floodplain area. The streambanks of these waterways are heavily armored throughout the watershed, and the channels are connected to the Combined Sewer Overflows (CSOs) of the St. Louis Metropolitan Sanitary District (MSD). Despite their modification however, their presence within the dense urban environment offers some of the only refuge for wildlife in the study area.

Table 4-14 summarizes information for the two waterways in the project area.

**Table 4-14: Waterways**

Identification Information	Deer Creek	River Des Peres
Basin (HUC Code)	07140101	07140101
State Basin Identification (WBID#)	1213	1710
Designated Use <sup>1</sup>	AQL, LWW, SCR, WBC-B	AQL, LWW, SCR
Classification	Permanent Flowing Water	Permanent Flowing Water
Outstanding National Resource Water	No	No
Outstanding State Resource Water	No	No
Assessed Waters	No	No <sup>2</sup>
Impaired Waters	Potentially <sup>3</sup>	Yes <sup>2</sup> (AQL)
Identified Impairment	Habitat Degradation	Chloride / Low DO
TMDL Status	NA	Unknown

<sup>1</sup>AQL = Protection of Warm Water Aquatic Life and Human Health-Fish Consumption Use

LWW = Livestock and Wildlife Watering

SCR = Secondary Contact Recreation

WBC-B = Whole Body Contact Recreation (non-public areas)

<sup>2</sup> River des Peres is listed as impaired downstream of the study area for chloride due to nonpoint source urban runoff and impaired for low dissolved oxygen, source unknown on the 2010 303(d) list.

<sup>3</sup>Listed as 'Potentially Impaired' in 305(b) report, not assessed.

Source: Missouri Department of Natural Resources Website:

<http://dnr.mo.gov/env/wpp/waterquality/305b/> & <http://dnr.mo.gov/env/wpp/waterquality/303d.htm>

## 4.5.2 Environmental Consequences

### 4.5.2.1 No Build

The No Build Alternative may cause negligible water quality impacts from erosion and sedimentation during pavement and structure maintenance activities over and near waterways. Potential impacts associated with highway operations (runoff) and maintenance activities (herbicide application, deicing) would be unchanged from current conditions.

### 4.5.2.2 Build Alternatives

The Build Alternatives may cause temporary water quality impacts from erosion and sedimentation during construction activities. Permanent impacts include construction of new piers which will modify the streambanks at the bridge crossing over Deer Creek. While not currently included in the preliminary engineering, a preferred alternative selected during the design process may result in brush clearing and stabilization measures to the northern bank of Deer Creek as a part of this project. The existing northern streambank within the project area is currently stabilized through miscellaneous and non-standardized placement of rock material. Any modifications to the streambank would maintain existing channel geometry; stabilization

would conform to U.S. Army Corps of Engineers and MoDOT bank stabilization standards. No permanent impacts are anticipated to other waterways in the study area. The footprint of the preliminary alternatives is present within a highly urbanized area with few permeable surfaces exposed. The new roadway surfaces would create a higher rate of traffic flow through the project area which may increase the amount of contaminants associated with motor vehicles traffic (i.e. deicing agents, tire filler, motor oils, metals, etc.) during runoff events entering Deer Creek and the River des Peres.

#### **4.5.3 Mitigation Measures**

This project will result in the disturbance of more than one acre of total land area. Accordingly, it is subject to the requirement for a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from the construction sites. Requirements applicable to such a permit will be followed, including the preparation of a Stormwater Pollution Prevention Plan (SWPPP). Such a plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site and shall describe and ensure the implementation of practices which will be used to reduce the pollutants in discharges associated with construction site activity and to assure compliance with the terms of the permit.

Best Management Practices (BMPs) to control sediment loss from the site during construction will be outlined in the SWPPP. Additionally, permanent BMPs will be integrated into the preferred alternative to capture a portion of the roadway runoff during storm events for passive treatment and removal of contaminants flowing from the roadway to the waterways during precipitation. These BMPs have not been identified in preliminary design, but may include items such as bioswales or sand filters. The appropriate BMPs will be fully developed in the final design.

### **4.6 FLOODPLAINS**

#### **4.6.1 Regulatory Framework**

The Federal Emergency Management Agency (FEMA) under their National Flood Insurance Program (NFIP) prepares Flood Insurance Rate Maps (FIRM) for areas prone to flooding. These maps are used to determine the limits of the 100-year (base) floodplain and the extent of possible floodplain encroachment. Floodplains are low-lying, flat or nearly flat areas of land adjacent to rivers, streams, and other water courses, that are periodically inundated with water due to natural events. A 100-year flood is defined as a flood which has a one percent chance of being equaled or exceeded in magnitude in any given year. The 100-year floodplain is any area that would be covered by water during a 100-year flood event. The 500-year floodplain designates the area that would be inundated by a flood that has a two percent chance of being equaled or exceeded in magnitude in a given year.

A regulatory floodway is defined as the channel of a stream plus the adjacent area that will be inundated with water during a 100-year flood event and must remain free of encroachment to avoid increasing the base flood elevation during a 100-year flood event. FEMA has mandated that projects can cause “no rise” in the flow within the regulatory floodway, and no more than a one-foot cumulative rise of the flood elevation within the 100-year floodplain.

For projects that are in an incorporated municipality, the local municipality issues the floodplain development permits. In the case of projects proposed within regulatory floodways, a “No-Rise” certificate, if applicable, would be obtained prior to issuance of a floodplain development permit.

The State Emergency Management Agency (SEMA) is the agency which operates the flood-buyout program in the State of Missouri. The purpose of this program is to purchase property that has been developed in the floodplain and remove all structures located on the property. This aids in restoring the floodplain and reducing the amount of money paid out as a result of flood insurance claims. Since federal money is used to fund the flood buyout program, other federally funded projects may not be located on property that was purchased as part of a FEMA/SEMA flood insurance buyout program. Correspondence with SEMA revealed that there were no SEMA-buyout properties located within the South County Connector study area.

Executive Order 11988, *Floodplain Management*, (EO 11988) directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are to provide public notice of proposed actions in floodplains and make a finding that there is no practicable alternative before taking action that would encroach on a 100-year floodplain. U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, outlines the DOT policies and procedures for implementing EO 11988.

The FHWA's floodplain encroachment policy requires the avoidance of longitudinal encroachments wherever practicable. If longitudinal floodplain encroachments cannot be avoided, the degree of encroachment should be minimized to the extent practicable. Generally, any increase in the 100-year water-surface elevation produced by a longitudinal encroachment on a NFIP floodplain should not exceed the one foot allowed by the federal NFIP standards. Obtaining appropriate floodplain permits from the local municipalities are an environmental commitment of this project.

In natural systems, floodplains provide a number of important functions by creating wildlife habitat, providing temporary storage of flood water, preventing heavy erosion caused by fast moving water, recharging and protecting groundwater, supporting vegetative buffers to filter contaminants, and accommodating the natural movement of stream flows. Floodplains store excess water during floods and slow down the speed of the flowing water which protects areas farther downstream. Slower water velocities help reduce erosion and allow sediments in the water to settle, often providing nutrients to fertile floodplains.

#### **4.6.2 Affected Environment**

The South County Connector study area is located within the River des Peres watershed of the Mississippi River basin. Surface water resources within the South County Connector study area include River des Peres, Deer Creek, and North Tributary to River des Peres. All of these water courses flow into River des Peres, which eventually flows into the Mississippi River. During flood events, roadways throughout the area, including Hanley Road/Laclede Station Road and Big Bend Boulevard, have been inundated affecting access to homes and businesses. The Deer Creek flood events tend to rise and dissipate quickly, causing temporary impacts on local roadway traffic and adjacent properties.

Both St. Louis County and the city of St. Louis participate in the NFIP and have adopted flood insurance studies to identify flood hazards for floodplain management and flood insurance purposes. The current NFIP FIRM for the Deer Creek area<sup>38</sup> and three NFIP FIRMs for the

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<sup>38</sup> FEMA FIRM St. Louis County, Missouri, Panel 302 of 420; Map Number 29189C0302 H, August 2, 1995.



River des Peres area of the revised study area<sup>39</sup> were reviewed to determine the extent of the 100-year floodplain and regulatory floodway within the South County Connector study area. The 100-year floodplains and floodways mapped along Deer Creek and River des Peres within the South County Connector study area are depicted on Exhibits 4-7 and 4-8.

#### **4.6.3 Environmental Consequences**

##### **4.6.3.1 No Build**

The No Build Alternative would have no impacts on floodplains or floodways. Because no new right-of-way would be required, no new floodplain encroachments would occur. Maintenance of existing bridges, culverts, parking areas, and multi-use trails located within the floodplain would continue and would not create additional encroachments into the floodplain. Area road closures resulting from seasonal flooding would continue to occur. Under the No Build Alternative, there are no plans to raise existing roadways or property entrances above the current base flood elevation. No additional improvements would be made in the study area to address flooding.

##### **4.6.3.2 Build Alternatives**

Construction of either Build Alternative 1 or Build Alternative 2 would require the placement of fill materials and structures within the 100-year floodplain associated with Deer Creek and River des Peres. The corridors defined for each Build Alternative include approximately 16.1 acres of floodplain of which 5.5 acres are in the floodway of Deer Creek within the Deer Creek Center Shopping Complex. Construction of the South County Connector would include the placement of fill materials for the roadway embankment, construction of bridge piers and culverts, and channel improvements and bank stabilization along Deer Creek within the 100-year floodplain. The bridge, culvert, and channel improvements for Build Alternative 1 would affect approximately 1.5 acres of floodplain of which 1.5 acres are in the floodway, and Alternative 2 would affect approximately 1.2 acres of floodplain/floodway. Near the Shrewsbury MetroLink Station, both Build Alternatives cross areas of the 500-year floodplain associated with River des Peres. At the south end of the project where both alternatives tie into River Des Peres Boulevard, River Des Peres Boulevard is located within the River des Peres 100-year floodplain. Both alternatives would be constructed at-grade, modifying the existing contours within the floodplain with minimal amounts of new fill material placed within the floodplain to match existing grades. Based on information from FEMA, it is anticipated the depth of flooding would be less than one foot and would not cause a rise in the 100-year flood elevation.

The preliminary design of Build Alternative 1 includes two parallel bridges over Deer Creek with only one bridge required with Build Alternative 2. For both Build Alternatives, the placement of bridge abutments and/or bridge piers would be determined to minimize impacts within the floodplain. Where the corridors are adjacent to Deer Creek and Deer Creek Center property, a section of the South County Connector would need to be designed at an elevation below the 100-year base flood elevation in order to obtain a “No Rise” certificate and to preserve the amount of existing floodplain storage along the creek. Along this segment of the South County Connector, a minimum of 660 feet in length would parallel the 100-year floodplain and could be temporarily overtopped by flood flows in the future. An alternative approach is to design the roadway as high as possible without raising the base flood elevation. Using this approach, the preliminary design for the South County Connector through Deer Creek Center would include excavating an area on the south side of South County Connector between the proposed road

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<sup>39</sup> FEMA FIRM City of St. Louis, Missouri, Panels 77 and 79 of 125; Map Numbers 2903850077C and 2903850079C, respectively, May 24, 2011; FEMA FIRM St. Louis County, Missouri and Incorporated Areas, Panel 304 of 420; Map Number 29189C0304 H, August 2, 1995.

and Deer Creek. This excavated area, or “bench,” would offset the fill used to raise the roadbed above the parking lot.

A hydraulic analysis will be completed as a part of the roadway design process. This analysis will be used to determine the appropriate elevation of the roadway and to quantify the impact of the bridge and culvert design on the flood elevation and flood storage volume available within the 100-year floodplain. Through coordination with the local municipalities and FEMA, a floodplain development permit and a Conditional Letter of Map Revision (CLOMR) would be completed to authorize these unavoidable floodplain impacts. Mitigation, in the form of compensatory storage such as creating additional low-lying terraced areas within the floodplain, may be required as a condition of the floodplain development permit and the CLOMR.

#### **4.6.3.3 Only Practicable Alternative Finding**

EO 11988 and the Federal-Aid Highway Guide (23 CFR 650 Subpart A) require federal agencies to avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplains. In implementing EO 11988, it is the FHWA’s policy to do the following:

- Encourage prevention of uneconomic, hazardous or incompatible use and development in the floodplain.
- Avoid longitudinal or other significant encroachments where practicable.
- Minimize impacts that adversely affect base floodplains.
- Restore and preserve the natural and beneficial floodplain values.
- Avoid support of incompatible floodplain development.
- Be consistent with the intent of the Standards and Criteria of the NFIP and local floodplain management.

Both Build Alternatives 1 and 2 have unavoidable encroachments into the Deer Creek and River des Peres floodplains. These encroachments may be considered significant encroachment because there may be adverse impacts on natural floodplain values such as flood storage, natural habitat, and open space.

This section sets forth the basis for a finding that there is no practicable alternative to the construction of the South County Connector in the floodplain; that the proposal includes all practicable measures to minimize harm to these resources; and that the action will conform to applicable State and local floodplain protection standards.

#### **4.6.4 Mitigation Measures**

Mitigation to provide compensatory flood storage along with other habitat restoration along Deer Creek may be required, depending on the type and magnitude of the impacts of the final design. Based on the preliminary hydraulic analysis conducted for Alternatives 1 and 2, no additional compensatory flood storage is required. Depending on the actual alignment and design of the South County Connector, hydraulic analyses conducted during final design would determine if additional flood storage is required to achieve a “no rise”. Compensation for impacts to wetland habitats and waters of the U.S. within the floodplain would be accomplished through the purchase of credits within an existing wetland bank, as described in Section 4.8.3.

In addition to addressing the direct impacts of the South County Connector on existing flood storage, mitigation for riparian habitat loss could be incorporated into the development of

compensatory storage. The Deer Creek Watershed Alliance developed a plan for the Deer Creek Watershed in 2011.<sup>40</sup> This plan calls for the implementation of bank stabilization and habitat restoration measures along Deer Creek to minimize soil erosion and to help moderate flood flows. Within the compensatory storage areas, native tree and riparian plantings could be incorporated in addition to channel improvements, including the creation of riffle and pool complexes, to provide additional in-stream habitat. Existing stream meanders could also be improved to slow down flow velocities, reducing erosion, and allowing sediments to be deposited within the channel, therefore improving water quality downstream.

#### **4.6.5 Indirect Impacts**

One of the objectives of EO 11988 is to avoid indirect support of floodplain development wherever there is a practicable alternative. According to the EO 11988, an action supports floodplain development if it encourages, allows, serves, or otherwise facilitates additional floodplain development. Deer Creek Center, which has had a number of vacant structures for several years, is located within the 100-year floodplain and could be redeveloped in the future. This potential development would be in accordance with the city of Maplewood's Code of Ordinances, Article III, Flood Control. A redevelopment plan was submitted to the city of Maplewood in August 2011.<sup>41</sup> The redevelopment plan proposed to reduce the footprint of the existing buildings for use as a new retail center and also proposed the inclusion of rain gardens and other BMPs to meet the new MSD's water quality standards. The city of Maplewood approved rezoning of the Deer Creek Center property to a Planned Urban Development (PUD) classification on December 5, 2011. Construction of the project began in summer 2012. The South County Connector would relocate and reestablish any rain gardens created as a part of the Deer Creek Center renovations.

### **4.7 WETLANDS AND NON-WETLAND WATERS OF THE U.S.**

The U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (1987) defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Waters of the U.S. include navigable waters, tributaries to navigable waters, interstate waters and their tributaries, and all adjacent wetlands (non-wetland Waters of the U.S. include all jurisdictional waters other than wetlands). Impacts to wetlands and Waters of the U.S. in St. Louis County, including impacts from highway projects, are regulated by the St. Louis District of the USACE under Section 404 of the Clean Water Act. Project area wetland resources and impacts due to Build Alternatives are detailed in this section.

#### **4.7.1 Affected Environment**

There are few wetlands located in the proximity of the project area due to the long history of urban development. The National Wetland Inventory (NWI) maps produced by the U.S. Fish and Wildlife Service identified the River des Peres as the only potential location for wetlands within the study area. Field investigations of the study area did identify one location adjacent to the River des Peres near Interstate 44 as a wetland.

In the northwest corner of the Shrewsbury MetroLink Station property, a small wetland was found in a depression created by embankments for the BNSF railroad, Interstate 44, and the MetroLink parking lot. This wetland had been identified independently in the past and was

<sup>40</sup> *Deer Creek Watershed Plan*. Deer Creek Watershed Alliance, 2011. <http://deercreekalliance.org/plan.aspx>

<sup>41</sup> *Deer Creek Shopping Center Redevelopment Proposal*, Summit Development Group; August 30, 2011.

partially filled by the construction of the MetroLink parking lot (the impact was mitigated and permitted by the St. Louis USACE). The remaining wetland area (0.26 acres) is a small, wet meadow with low floristic quality. No other wetlands were identified within the project study area; however, non-wetland Waters of the U.S. include Deer Creek, River des Peres, and a small ditch connecting a stormwater outlet to Deer Creek. Exhibits 4-9 and 4-10 depict the locations of these resources. Appendix E includes a copy of the wetland delineation report and the USACE preliminary jurisdictional determination letter.

Wetland functions can be loosely categorized as hydrologic, biogeochemical, or biological in nature. Examples of hydrologic functions include surface and groundwater recharge, temporary storage of flood water, and increased watershed storage capability. Biogeochemical functions include retention of particulates and transformation of nutrients. Biological functions include the maintenance of native plant diversity, provision of wildlife habitat, and fisheries support. Because the wetland in the project area is within the floodplain of the River des Peres, it has the ability to receive and desynchronize (hold) flood waters. Flood waters that do inundate the wetland lose flow velocity and deposit suspended solids, improving water quality downstream. Deposited sediments may also carry pollutants from the surrounding urban environment, which are also removed from the water. As a vegetated area along a waterway, the wetland may also provide foraging habitat or refuge to wildlife migrating through the area.

#### **4.7.2 Environmental Consequences**

##### **4.7.2.1 No Build**

The No Build Alternative will not impact wetlands or non-wetland Waters of the U.S., directly or indirectly.

##### **4.7.2.2 Build Alternatives**

Build Alternatives 1 and 2 would both impact the identified wetland. Despite efforts to avoid and minimize impacts to the wetland, the narrow range of options in the design-constrained interchange leaves no option but to impact the total area of the wetland (0.26 acres). As such, the functions of this wetland will also no longer be provided in the current location. Construction of the South County Connector would also include the placement of fill materials for the roadway embankment, construction of bridge piers and culverts, and channel improvements and bank stabilization along Deer Creek.

A Section 404 permit processed through the St. Louis District U.S. Army Corps of Engineers will be necessary to comply to the Clean Water Act for proposed impacts to waters of the US (Deer Creek). The full extent of the impacts will be determined in the next phase of the project; however, it is anticipated that the project will be eligible for processing under a Nationwide Permit #14 (Linear Transportation). The MDNR (Water Protection Program) is responsible for issuance of 401 Water Quality Certification as part of the Section 404 Permit to ensure the action complies with water quality standards in the State of Missouri. The MDNR has provided 'pre-certification' for certain Section 404 Nationwide Permits, including #14, provided the project maintains the identified general and specific conditions set forth by the MDNR. It is anticipated the project will meet the general and specific conditions for 401 Water Quality Certification.

##### **4.7.3 Mitigation Measures**

The impact to wetlands will be mitigated in accordance with USACE Section 404/401 permit requirements. It is anticipated that impacts could be offset through the purchase of 0.39 credit acres from the Rosedale wetland mitigation bank (certified through the St. Louis District

USACE) for a replacement ratio of 1.5:1. A map of available mitigation banks in the St. Louis area is included in Appendix E.

## 4.8 THREATENED OR ENDANGERED SPECIES

### 4.8.1 Regulatory Background

Under Section 7 of the Federal Endangered Species Act, the Federal Highway Administration (FHWA) is required to consult with the U.S. Fish and Wildlife Service (USFWS) to insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat.

The State of Missouri also protects state-listed species under Rule 3CSR10-4.111 of the Missouri Wildlife Code. The Rule prohibits the importation, transportation, sale, purchase, taking, or possession of listed species.

### 4.8.2 Affected Environment

The USFWS online database<sup>42</sup> identified the following eleven species which may occur within St. Louis County, Missouri: endangered Pink Mucket (*Lampsilis abrupta*), endangered Scaleshell (*Leptodea leptodon*), endangered gray bat (*Myotis grisescens*), endangered Indiana bat (*Myotis sodalis*), endangered Pallid Sturgeon (*Scaphirhynchus albus*), endangered running buffalo clover (*Trifolium stoloniferum*), the endangered snuffbox mussel (*Epioblasma triquetra*), the threatened Mead's milkweed (*Asclepias meadii*), and the threatened decurrent false aster (*Boltonia decurrens*). The database also identified two candidate species: spectaclecase (*Cumberlandia monodonta*) and sheepnose (*Plethobasus cyphus*). Table 4-15 summarizes the listed species and their associated habitat. Correspondence with the Missouri Department of Conservation (MDC) yielded a Heritage Review Report that showed no existing records of state or federally listed endangered species within one mile of the project area.

**Table 4-15: Federally Listed Threatened, Endangered, and Proposed Species**

Common Name	Scientific Name	Status	Habitat
Gray bat	<i>Myotis grisescens</i>	Endangered	Caves
Indiana bat	<i>Myotis sodalis</i>	Endangered	Hibernacula: caves and mines Maternity and foraging habitat: small stream corridors with well-developed riparian woods; upland forests
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Mississippi and Missouri Rivers
Pink Mucket	<i>Lampsilis abrupta</i>	Endangered	Rivers
Scaleshell	<i>Leptodea leptodon</i>	Endangered	Bourbeuse and Meramec Rivers
Snuffbox	<i>Epioblasma triquetra</i>	Endangered	Small to medium-sized creeks with swift current
Running buffalo clover	<i>Trifolium solonifereum</i>	Endangered	Disturbed bottomland meadows
Decurrent false aster	<i>Boltonia decurrens</i>	Threatened	Disturbed alluvial soils
Mead's milkweed	<i>Asclepias meadii</i>	Threatened	Virgin prairies
Sheepnose	<i>Plethobasus cyphus</i>	Proposed Endangered	Shallow areas in larger rivers and streams
Spectaclecase	<i>Cumberlandia monodonta</i>	Proposed Endangered	Meramec River

Source: Reproduced from USFWS Website: <http://www.fws.gov/midwest/endangered/lists/missouri-cty.html>

<sup>42</sup> USFWS Online Database, <http://www.fws.gov/midwest/endangered/lists/missouri-cty.html>, accessed February 2012.

Field investigations and coordination with the USFWS and MDC did not identify a significant potential for the presence of either state or federally listed species. However, USFWS identified the Indiana bat as having the potential to seasonally occur in the project area. A copy of this correspondence is included in Appendix B, Public and Agency Coordination.

The Indiana bat (*Myotis sodalis*) is a state and federally listed endangered species. Indiana bat winter habitat consists of caves and mines where individuals hibernate (October through March) in characteristic dense clusters. There are no caves or mines within the project area. Summer habitat (April through September) includes a variety of wooded settings (uplands, wetlands, and riparian areas) throughout Missouri. The juvenile and adult species forage along riparian corridors and roost in large diameter trees with loose bark and/or hollowed limbs. Due to the dominance of non-native and smaller diameter tree species lining the stream banks and the sparse patchy nature of urban vegetation, it is unlikely that substantial roosting habitat for the Indiana bat exists within the project area.

#### **4.8.3 Environmental Consequences**

##### **4.8.3.1 No Build**

The No Build Alternative will not impact threatened or endangered species, directly or indirectly.

##### **4.8.3.2 Build Alternatives**

The study area does not contain any known populations of listed species or critical habitat for listed species. The Indiana bat represents the only listed species with potential to exist within the study area, although the potential is very low. Any selected Build Alternative will result in the removal of trees within the corridor. Following protocols established by the USFWS and the MDC, either Build Alternative would not impact the Indiana bat.

#### **4.8.4 Mitigation Measures**

Tree surveys will be conducted prior to the start of construction to identify any trees which could serve as a maternity roost. Those trees identified within the construction zone will be removed between November 1<sup>st</sup> and March 31<sup>st</sup> to eliminate any potential impact to the Indiana bat during the non-hibernation period. All other tree removal will be conducted as necessary to complete the construction.

### **4.9 CULTURAL RESOURCES**

#### **4.9.1 Regulatory Background**

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. Section 470(f)), requires federal agencies to take into account the effects of their undertakings on historic resources and give the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings, as appropriate. The requirements of Section 106 are implemented under Title 36, Section 800 of the Code of Federal Regulations (36 CFR 800), *Protection of Historic Properties*. In addition to historic properties, archaeological sites are protected under the NHPA, and the Section 106 process is applied in a similar fashion when a project involves excavation of any kind.

The NHPA mandates that agencies perform the following actions:

- Initiate the Section 106 process by first determining whether the federal agency has an undertaking that is the type of activity that may affect historic properties. If the

federal agency determines that there is no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

- Initiate consultation with the appropriate State Historic Preservation Office (SHPO)/Tribal Historic Preservation Office (THPO). The agency should also plan to involve the public and identify other potential consulting parties. .
- Identify historic properties that may be affected by a project, including historic properties that either are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP.
- Assess the effect of the project on historic properties including the character defining features that resulted in the property's listing in the NRHP or that were considered in making the determination that it is eligible for listing in the NRHP.
- Consider means to avoid adverse effects. If it is not possible to avoid impacts to the historic property, then minimize impacts to the extent practicable. If it not possible to minimize impacts, then determine the appropriate mitigation for the adverse effect.

Section 4(f) of the Department of Transportation Act of 1966, as amended (49 U.S.C. 303), requires agencies to show there are no prudent and feasible alternatives to the "use" of a historic property either listed in, or eligible for listing in the NRHP. Section 4(f), which also addresses the use of publicly owned parks, recreation areas, and wildlife and waterfowl refuges, is discussed in detail in the Section 4(f) Evaluation, in Appendix H.

Cultural resources include historic (i.e., properties 50 years of age or older now and within the time the project is anticipated to be constructed), architectural, archaeological, and cultural (including Native American) resources that may be present within the project area.

Historic resources may be eligible for listing in the NRHP if they possess integrity of location, design, setting, materials, workmanship, feeling, and association; and if the resource is associated with any of the following criteria:

- Significant themes in our nation's history, or
- Significant persons in our nation's history, or
- Embody distinctive construction characteristics, works of a master, or works not individually distinctive (i.e., districts), or
- Have the potential to contribute information significant to history or prehistory.<sup>43</sup>

#### **4.9.2 Affected Environment**

Files, databases, and previous survey information were reviewed from a variety of sources to identify historic and archaeological resources within the South County Connector study area. File and data research was conducted through the National Park Service (NPS) NRHP on-line database, the MDNR SHPO office, the Missouri Historical Society Library, the Missouri State Archives, the Missouri History Museum Library and Research Center, the St. Louis County Department of Parks and Recreation, the St. Louis County and city of St. Louis real estate records, the St. Louis City Library, Western Historic Manuscripts Collection, and the Library at the University of Missouri at St. Louis. In addition to file research, field reconnaissance surveys also were conducted. Copies of the Cultural Resources Technical Report and the NRHP-Eligible

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<sup>43</sup> 36 CFR 60, National Register of Historic Places



Resources Within the Corridors Defined for Alternatives 1 and 2 Report are included Appendix F, Cultural Resources.

An Area of Potential Effect (APE) was identified based on the corridors under consideration for construction of Build Alternatives 1 and 2. The APE includes the geographic maximum extent of both corridors combined. Archaeological and architectural resources eligible for listing in the NRHP were identified within the APE. The direct (physical) impacts of each Build Alternative on the NRHP-eligible resources are presented in the following section. Indirect impacts (i.e., visual, noise, etc.) on historic resources are also assessed within the APE and within a secondary area that extends 50 feet beyond the edge of the APE. The APE for the South County Connector is depicted in Exhibits 4-11 and 4-12.

Based on the research conducted, there are no resources within the APE that are currently listed in the NRHP. Outside of, but lying adjacent to the APE, is a portion of the River des Peres Sewerage and Drainage Works (River des Peres). The River des Peres was named a National Historic Civil Engineering Landmark by the American Society of Civil Engineers (ASCE) in 1988. It is not listed in the NRHP. A more detailed description of the River des Peres is provided in Appendix F, Cultural Resources.

#### **4.9.2.1 Archaeological Resources**

A number of archaeological surveys have been previously conducted of areas within the APE. None of these surveys have revealed resources that are or would be considered eligible for listing in the NRHP. There is a low potential for undiscovered sites to be located in areas along Deer Creek and River des Peres, due to the substantial development which has occurred over time disturbing any sites that may be located there.

There were 17 tribes contacted by the FHWA as part of the agency scoping process conducted early in the study. The Osage Nation and the Miami Tribe of Oklahoma provided letters of response requesting review of the Phase I cultural resources survey and further coordination if potential sites of tribal significance are identified as a part of the project. No sites of tribal significance have been identified within the corridors for Build Alternatives 1 or 2.

#### **4.9.2.2 Architectural Resources**

Field reconnaissance surveys were conducted within the South County Connector study area in September 2011 and again in March 2012 within the APE defined for Build Alternatives 1 and 2. A total of 145 resources were reviewed and photographed within the APE. Each resource was evaluated for its potential eligibility for listing in the NRHP. Historic physical integrity was determined from a combination of site observations and research.

Of the 145 resources reviewed, the 13 resources listed in Table 4-16 were determined eligible for listing in the NRHP.

**Table 4-16: NRHP-Eligible Resources within the APE**

Resource Number*	Resource Name/Description	Date of Construction	Resource Location	NRHP Criteria
BA3116m	Tidewater South style house and ancillary building	1885-1900	3116 Bartold Avenue	C (Architecture)
BB3516m	Tavern (McClain's Corner)	1910	3516 Big Bend Boulevard	C (Architecture)
BNSF/LAN	BNSF Bridge	1925	BNSF and Lansdowne Avenue	C (Engineering)
CA3732m	Craftsman style house	1925	3732 Cambridge Avenue	C (Architecture)
CAR4100s/ CAR4200s	Carr Lane Company Foundry	1946-1957	4100 and 4200 Carr Lane Court	A (Industry)
DEV7209s	Temple-front vernacular house	1899	7209 Devonshire Avenue	C (Architecture)
EX4311s	Craftsman style house	1925	4311 Exeter Avenue	C (Architecture)
OX3725m	Queen Anne style house	c. 1900	3725 Oxford Lane	C (Architecture)
RDPChan	River des Peres Channel	1924-1931	East of APE	C (Engineering)
RDPPkwy	River Des Peres Parkway	1924	Between Lansdowne Avenue and Watson Road	C (Landscape Architecture)
RDP-WPA	River des Peres WPA Structure	1935	Between Lansdowne Avenue and Watson Road	C (Architecture)
SHR4118s	Laclede Gas Company industrial complex	1911-1960	4118 Shrewsbury Avenue	A and C (industry and Architecture)
SHR4309s	Colonial Revival house	1897	4309 Shrewsbury Avenue	C (Architecture)

\* Resource Number assigned by AHR  
Source: AHR Analysis

A brief description of each eligible historic property identified within the APE is provided below.

#### 3116 Bartold Avenue (BA3116m)

Constructed circa 1885, the form of this house is linked to the Tidewater South architectural tradition. The form of the auxiliary building to the rear of the house appears to have been a small grocery store. City Directories reveal that an early occupant, Adolphe Robyn, was a grocer. Both structures are in fair condition and the original integrity of the house is intact. The residence and store are a rare example of this style and typology for the area.

#### 3516 Big Bend Boulevard (BB3516m)

Constructed in 1910, this Two-Part Commercial Block brick building with a canted entrance displays original articulation and window placement. The second story fenestration appears original. An early occupant/owner was Leo and Rose Dinati, owners of the Dinati Soft Drink store. The secondary entrance did lead to the second floor living quarters, with the storefront or commercial space on the first story. In good condition, the original integrity of this early 1900s commercial/residential building is intact. This property may be a rare, surviving example of this building type for the area.

*BNSF Bridge Over Lansdowne Avenue (BNSF/LAN)*

This deck girder span with wood trestle approaches was built in 1925 for the St. Louis & San Francisco Railroad, established in 1853 in Missouri. The historic rail line later became part of the Burlington Northern Santa Fe after several company mergers throughout the 19th and 20th century. While this type of bridge was once a common type, it is now considered a vanishing resource throughout the United States. It was also associated with the St. Louis & San Francisco Railroad, one of the earliest lines in the state of Missouri.

*3732 Cambridge Avenue (CA3732m)*

Constructed circa 1909, this Craftsman style home was the residence of Daniel and Minnie Brown. Daniel was a stonemason in the St. Louis area. The home appears to have been carefully restored. It is in excellent condition and its historic integrity is intact.

*4100 and 4200 Carr Lane Court (CAR4100s and CAR4200s)*

The earliest occupant on the site was the Texas Oil Company, which occupied the small brick gabled building originally addressed as 4100 Gratiot, now 4100 Carr Lane. Other occupants included Washington University and possibly a torpedo manufacturing company (during WWII). Carr Lane Castings, which moved to the site in 1956, was established by Myrtle and Earl Walker, et. al, in 1952 at an old wooden garage. Earl Walker, a former foreman in the tooling division at McDonnell Douglas Aircraft Company, became increasingly interested in the need for standardized machinery parts. Since its inception, Carr Lane and its subsidiaries provide clamps, pins, chuck jaws, fixturing devices and component parts for the metalworking field. In addition to manufacturing and distributing machine parts, the company provides production casting as well as art and fabrication. Among their castings, Carr Lane has worked with internationally-known artists including Ernest Trova, Alexander Calder, Louise Nevelson, Beverly Pepper, and Claes Oldenburg.

*7209 Devonshire Avenue (DEV7209s)*

This temple front vernacular home, constructed circa 1899, is one of the earliest residences to survive in the area. The original owners were quite possibly Freeman and Birdie Condor. Freeman was the vice president of a glassworks and stove manufacturing company located in Valley Park, Missouri.

*4311 Exeter Avenue (EX4311s)*

Constructed circa 1909, this Craftsman style home, with its bell cast pyramidal roof, has seen scant modification over the years, except for replacement of the windows. It appears in good condition and retains its historic integrity. Original owners may have been Frank (a local accountant) and Mary Cantwell.

*3725 Oxford Lane (OX3725m)*

Constructed circa 1900, this Queen Anne style home (front gabled) remains in good condition. The early or original owners were William T. and Annie Hartwell. William was a real estate businessman. The full-width shed porch may be an early addition to the otherwise unaltered primary façade. The structure has retained the majority of its historic integrity.

*River des Peres Channel (RDPChan)*

The River des Peres remained largely untouched until the 1850s when industrialization in the form of brick factories and slaughterhouses were constructed along its banks and began to pollute the river and its tributaries. During the St. Louis World's Fair of 1904, the river was

temporarily covered with wooden channels and shortly thereafter, that portion of the river in Forest Park was placed entirely underground. In 1905 a severe flood prompted the city to look at the problem at which time the famed city planner, George E. Kessler, was asked to design what would become River Des Peres Boulevard. It was not until 1915, after more flooding and the loss of many lives, that the city seriously took steps to fix the problems of River des Peres. In 1916 St. Louis Mayor Henry W. Kiel called for a hydrologic study, engineered by W. W. Horner who presented a plan to the St. Louis Board of Public Service. Voters decided to implement Horner's scheme, based on Harland Bartholomew's original 1916 River des Peres plan. The plan which apportioned the river into sections, lettered "A" through "J", changed the course of the River des Peres. Between 1933 and 1940 the city of St. Louis and the federal Works Progress Administration (WPA) hired unemployed workers to pave the remaining banks of the river. During this period, the channel acquired its present day appearance.

Harland Bartholomew and Wesley Winans Horner were responsible for the design and implementation of the River des Peres Sewerage and Drainage Works. Bartholomew, a noted planner and civil engineer, formulated the plan for the River des Peres channel for storm water and sewers in 1916 for the St. Louis City Plan Commission. Bartholomew was one of the first full-time city plan engineers in the country, a position he held with the city of St. Louis in 1916. Additionally, his company, Harland Bartholomew & Associates, in St. Louis, was one of the earliest landscape design firms in the County. The River des Peres Sewerage and Drainage Works is the "first truly large urban drainage works designed from the engineering applications of what is now considered modern hydrology and is the first large scale demonstration of the use of large reinforced sewer sections." W. W. Horner was the Chief Engineer responsible for the implementation of the River des Peres plan. Construction took place from 1924-1931. "Because it solved the problems of both urban drainage and sanitary sewage conveyance in one major project allowing complete development within the drainage basin," the River des Peres was named a National Historic Civil Engineering Landmark by the American Society of Civil Engineers (ASCE) in 1988. According to the ASCE nomination, "there is no known direct parallel to this project." The River des Peres drains approximately 115 square miles of the St. Louis City and County area.

#### River Des Peres Parkway (RDPPkwy)

Designers involved in the planning and implementation of the River Des Peres Boulevard include George Edward Kessler with Eda A. Sutermeister, who studied at the University of Missouri and was one of a handful of female landscape architects practicing in the United States during the early 1900s. Kessler and Sutermeister designed the River Des Peres Boulevard circa 1911, a plan adopted by the St. Louis City Plan Commission. The stone and wood structure built by the WPA circa 1935, is one of the few standing historic resources found along the River Des Peres Boulevard.

#### River des Peres WPA-Era Structure (RDPWPA)

Stone building constructed within River Des Peres Park by the WPA circa 1935. The structure is the only one within the South County Connector study area, but other similar structures are located in the park south of Watson Road.

#### 4118 Shrewsbury Avenue (Shr4118s)

The Laclede Gas Company complex of late 19th and Mid-Century modern buildings appears significant in the area of industry and perhaps, architecture. The Shrewsbury site was where the St. Louis County Gas Company built its' main supply system, as well as the first gasometer in 1911. Laclede Gas, doing business as Laclede Power and Light, also supplied electric service

within the city of St. Louis. In the 1930s, a disagreement between Laclede Gas and the Union Electric Company, who operated the St. Louis County Gas Company, resulted in a battle for electric utility customers along the boundaries of each company's franchise. The dispute came to a halt in 1941, when the Securities Exchange Commission suggested that both companies divest of their holdings through reorganization. In 1947, all gas service was taken over by Laclede Gas while all electric service was given to Union Electric. The dispute culminated in 1948 when Laclede Gas acquired the St. Louis County Gas Company. There are a total of eight permanent buildings and several auxiliary facilities. As originally built for St. Louis County Gas Company, the Machine Shop (which also included the Blower room, Water Gas Producers), the Engine Room and the Office & Laboratory/Meter Room were constructed of steel frame with Brick Curtain Walls and concrete floors. The original and intact buildings associated with St. Louis County Gas are in good condition, retaining their integrity and thus their significance.

#### 4309 Shrewsbury Avenue (Shr4309s)

Built in 1897 by John H. Rohde, a saloon owner from St. Louis, this two-story brick residence with Colonial Revival and Art Nouveau elements, is intact from the original design. It was part of the original Shrewsbury Park Second Addition, platted from the Murdoch Farm. It appears that this hipped roof residence is the only surviving house of the original Shrewsbury Park, officially platted in 1889 by Gregorie Sarpy and Charles Gratiot. In 1890 the area was divided into farms and sold to various families. The area now known as Shrewsbury was originally a 278-acre farm owned by Gen. John Murdoch. Gratiot's League was one of the largest Land Grants ever given in the United States. Shrewsbury was incorporated in 1913.

Each of these resources is depicted on Exhibits 4-11 and 4-12. Missouri Historic Inventory Forms have been prepared for each resource listed in Table 4-16 and submitted to the MoDOT and the SHPO for formal evaluation. Copies of the inventory forms, photographs of each resource, and additional descriptions are included in Appendix F, Cultural Resources.

### **4.9.3 Environmental Consequences**

The determination of effect is made by the federal agency based on the criteria described under 36 CFR 800.5. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.<sup>44</sup>

The criteria for adverse effect include:

- Physical destruction or damage to all or part of the property.
- Alteration of the property (i.e., restoration, rehabilitation, repair, maintenance, hazardous material remediation, providing ADA-accessible features) that are not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68).
- Removal of the property from its historic location.
- Change in the character of the use of the property or of its physical features that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's features.
- Neglect of the property causing its deterioration (except where such neglect/deterioration are recognized qualities of a property of religious and cultural significance).

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<sup>44</sup> 36 CFR 800.5

- Transfer, lease, or sale of the property out of federal control or ownership without adequate and legally enforceable restrictions or condition to ensure long-term preservation of the property's historic significance.

#### 4.9.3.1 No Build

The No Build Alternative would have no direct effect on the eligible architectural resources identified within the study area. No construction would occur on or in proximity to the properties that would directly affect the resources. Other planned development in the study area (i.e., Sunnen Corporation expansion along Hanley Road or the proposed redevelopment of the Deer Creek Center) may have an indirect effect on these resources by altering the view shed from or the setting of these resources.

#### 4.9.3.2 Build Alternatives

Build Alternative 1 would have an adverse effect on three eligible historic resources, and Build Alternative 2 would have an adverse effect on two historic resources. Both direct and indirect effects would occur. The effect of each Build Alternative is described in Table 4-17.

**Table 4-17: Effects of the Build Alternatives on Eligible Historic Resources**

Resource		Summary of Effects	
Number	Resource Name/Description	Build Alternative 1	Build Alternative 2
BA3116m	Tidewater South style house and ancillary building	No adverse effect	No adverse effect
BB3516m	Tavern (McClain's Corner)	Removal of the property	Removal of the property
BNSF/LAN	BNSF Bridge	No adverse effect	No adverse effect
CA3732m	Craftsman style house	No adverse effect	No adverse effect
CAR4100s CAR4200s	Carr Lane Company Foundry	No adverse effect	No adverse effect
DEV7209s	Temple-front vernacular house	Removal of the property	Removal of the property
EX4311s	Craftsman style house	No adverse effect	No adverse effect
OX3725m	Queen Anne style house	No adverse effect	No adverse effect
RDPChan	River des Peres Channel	No adverse effect	No adverse effect
		Effect	Effect
RDPpkwy	River Des Peres Parkway	Modification of the roadway alignment and addition of new roadway within the park area.	Modification of the roadway alignment and addition of new roadway within the park area.
RDP-WPA	River des Peres WPA Structure	No adverse effect	No adverse effect
		Adverse effect	
SHR4118s	Laclede Gas Company industrial complex	Bridge over property and removal of 1-2 buildings within the complex	No adverse effect
SHR4309s	Colonial Revival house	No adverse effect	No adverse effect

Source: Burns & McDonnell Analysis; 2012

The tavern (BB3516m), the Laclede Gas Company (SHR4118s), the temple-front vernacular house (DEV7209s), and River Des Peres Parkway (RDPpkwy) are located within the proposed right-of-way anticipated for the South County Connector. Some of the remaining resources may

be indirectly affected by the South County Connector. The proposed roadway improvement would be visible from some of the properties and some of the properties may be exposed to an increase in noise levels. These indirect effects would not adversely affect the characteristics of the resources that make them eligible for listing in the NRHP. Secondary development in the area that may occur following construction of the South County Connector would also alter the visual character of the area around these resources, but is not anticipated to alter the characteristics that contribute to the eligibility of these resources.

The Missouri Historic Inventory Forms prepared for each of these 13 resources were submitted to the SHPO for their review and concurrence. SHPO concurred that the 13 properties listed in Table 4-17 are eligible for inclusion in the NRHP. SHPO also concurred that the Build Alternatives would have an adverse effect on the three properties (Tavern/McClain's Corner; Temple front house; and Laclede Gas Complex). A copy of the SHPO's concurrence letter, dated September 26, 2012, is included in Appendix B, Public and Agency Coordination.

#### **4.9.4 Mitigation Measures**

Section 4(f) of the Department of Transportation Act of 1966, as amended (49 U.S.C. 303), requires agencies to show there are no prudent and feasible alternatives to the "use" of a historic property either listed in, or eligible for listing in the NRHP. Accordingly, measures to avoid and/or minimize impacts to the historic properties were evaluated as a part of the Section 4(f) Evaluation, which is included in Appendix H.

Mitigation typically includes a combination of field documentation and historic archival research for the resource. The appropriate measures to mitigate the impacts to the historic resource(s) will be determined through consultation among the SHPO, FHWA, and the County. The Section 106 documentation, including a copy of the Draft MOA, will also be coordinated with the Advisory Council on Historic Preservation. A Memorandum of Agreement (MOA) is required to resolve adverse effects. A Draft MOA has been developed to describe the potential mitigation measures to be implemented, and is included in the Draft Section 4(f) Evaluation, in Appendix H. The Final MOA must be executed and included in the Final EIS/Final Section 4(f) Evaluation before FHWA can issue a Record of Decision.

### **4.10 HAZARDOUS MATERIALS AND SOLID WASTE**

#### **4.10.1 Regulatory Background**

Hazardous substances, defined in various ways under a number of regulatory programs, can present potential risks to both human health and to the environment when not managed properly. Hazardous wastes are those materials that exhibit certain characteristics (as defined by laboratory analysis), are generated from specific industrial processes, or chemical compounds, that if abandoned, could pose a threat to human health and the environment. Solid wastes comprise a broad range of materials that include garbage, refuse, sludge, non-hazardous industrial waste, municipal wastes, and hazardous waste. Solid waste includes solids, liquids, and contained gaseous materials.

Because of past and present industrial use within the South County Connector study area, hazardous substances are present and may be encountered during construction, requiring proper disposal in compliance with applicable federal regulations. Hazardous materials and wastes within the South County Connector study area fall under the following regulatory programs:



- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (commonly referred to as Superfund) governs cleanup of contaminated sites. These sites have been reported to the EPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the CERCLA. Sites evaluated under CERCLA that pose serious threats to human health and the environment are placed on the National Priorities List (NPL) and are commonly referred to as Superfund sites.
- Resource Conservation and Recovery Act (RCRA) governs hazardous wastes and handlers of hazardous wastes that are subject to reporting requirements (Threshold Planning Quantities) under Sections 311, 312 and 313 of the Superfund Amendment and Reauthorization Act (SARA). These sites generate, transport, store, treat and/or dispose of hazardous waste as defined by RCRA.
- Emergency Response Notification System (ERNS) is a national database published by the EPA that lists sites where reported releases of hazardous substances and petroleum have occurred.
- Other federal and state programs – the Missouri Department of Natural Resources (MDNR) also maintains databases in accordance with federal regulations that provide information on facilities with underground storage tanks (USTs), leaking underground storage tanks (LUSTs), spills reported under the MDNR's Environmental Emergency Response Section (SPILLS), and dry cleaning facilities (DRY CLEANERS).

The following section provides a list of the hazardous substance and solid waste sites identified within the study area.

#### **4.10.2 Affected Environment**

In order to identify the current environmental conditions within the study area, a database search was conducted for the South County Connector study area by EDR, Inc. (formerly Environmental Data Resources). The databases searched conform to the American Society for Testing and Materials (ASTM) Standard E 1527-00 and included the federal and state databases noted in the previous section. In addition to the database search, field reconnaissance was conducted within the corridors identified for both Build Alternatives to verify the database information retrieved and to identify any other properties of potential environmental concern. A copy of the field reconnaissance report is included in Appendix G, Hazardous Materials.

Table 4-18 summarizes the sites located within the corridors for the Build Alternatives. Exhibits 4-13 and 4-14 depict the sites located within the corridors for Build Alternative 1 and Build Alternative 2, respectively.

The majority of the sites located within the study corridor consist of commercial and light industrial uses that have outdoor vehicle and/or equipment storage areas. These sites are concentrated within the former Deer Creek Center, along Big Bend Industrial Court, near Interstate 44, and along the BNSF rail line at the southern end of the study area. Sites such as existing gas stations, towing companies, St. Louis Paving Company, and Bi-State Emulsions, Inc. have a number of USTs and above ground storage tanks (ASTs) that may have contributed to localized soil contamination as a result of spills and leaking tanks.

A number of property uses have changed over time, but residual features or contamination may still be present on the property. The database search indicated that two dry cleaners were

previously located within the Deer Creek Center property. Although these businesses have closed, there is the potential that chlorinated solvents used in the business may still be present on the property.

The Laclede Gas Company occupies a large tract of land in the center of the study area just to the north of Interstate 44. The facility is currently used as a natural and propane gas distribution facility. The property was originally known as the Shrewsbury (or Webster Groves) (former) Manufactured Gas Plant (FMGP), which produced carburetted water gas (manufactured gas) from 1911 through 1961. A portion of the plant was dismantled in 1961. In 1994, Laclede entered into an Administrative Order of Consent (AOC) with the USEPA to characterize potential sources of soil contamination and to develop a remediation plan based on the findings of a site investigation. Remediation efforts were completed in 2003 which included institutional controls (i.e., placing a deed restriction on a portion of the property, limiting the future use of the site as well as excavation activities), stabilization of the bank along Deer Creek and phytoremediation (i.e., planting of poplar trees), material removal and off-site disposal, and provisions for on-going pavement and site maintenance. Two monitoring wells were also installed to monitor groundwater. Contaminated soil is still present on-site and is managed according to the operational procedures outlined in the AOC.

Manufactured gas product was stored in large gas holder tanks (greater than 1,000,000 cubic feet each) located just south of the main plant and the BNSF tracks on a site known as the Former Shrewsbury Gas Holder Property. These tanks were removed in 2009-2010. Remediation of the Former Shrewsbury Gas Holder Property under the MDNR's Brownfields/Voluntary Cleanup Program (BVCP) was completed in 2010. The site was remediated to non-residential target levels for lead and polycyclic aromatic hydrocarbons (PAHs) with lead contaminated soil capped on-site.

The Mississippi River Gas Line Pressure Reducing Station (MRT) is located along the southeastern edge of the Former Shrewsbury Gas Holder Property. This facility consists of above ground and underground piping and pressure regulating equipment that facilitates the delivery of natural gas throughout the St. Louis area.

Railroads were constructed throughout the project area in the 1870s and 1880s. Several railroad lines, including those currently owned and operated by the Union Pacific Railroad and Burlington Northern and Santa Fe Railroad companies are located in the study area. As part of this EIS process, no evidence of potential soil and groundwater contamination was identified in association with the railroad tracks; however soil and groundwater contamination may exist along each railroad corridor, the result of undocumented events and an accumulation over time of leaks, spills, and hydrocarbon exhaust residues from rail traffic.

**Table 4-18: Sites of Potential and Recorded Environmental Concern Within the Study Area**

				Potential Material	
General Activity Description, Site Features, and Database				Hazardous	Solid
Site ID	Property Name	Location	Listings	Substances	Waste
COMMERCIAL AND INDUSTRIAL PROPERTIES					
1	Phillips 66 and Car Wash	3033 S. Hanley Road	Gas station; USTs, used oil and other petroleum products, car wash	X	X
2	St. Louis Tag Company	3201 Laclede Station Road	Light manufacturing and distribution; loading dock, outdoor storage, and a UST	X	X
3	Conoco Station	3600 S. Big Bend Boulevard	Gas station; USTs, used oil and other petroleum products, LUST	X	X
4	Former Venture Store #23 Deer Creek Center	3200 Laclede Station Road	Vacant large box commercial development, UST; LUST	X	X
5	Bono Burns Distribution	3614 S. Big Bend Boulevard	Bakery supply and equipment distributor; loading dock		X
6	RJP Electric	3604 S. Big Bend Boulevard	Electrical contractor; indoor material storage		X
7	Overhead Door	3610 S. Big Bend Industrial Court and 3920 Shrewsbury Avenue	Light manufacturing and distribution; loading dock, outdoor material storage		X
8	St. Louis Paving Company	3600 Big Bend Industrial Court	Roadway construction and maintenance; outdoor equipment and materials storage, ASTs	X	X
9	Terry's Towing	3600 Big Bend Industrial Court	Outdoor vehicle storage; AST, UST	X	X
10	Barcliff's Towing	3650 Big Bend Industrial Court	Outdoor vehicle storage		X
11	Bi-State Emulsions, Inc.	3714 Big Bend Industrial Court	Manufacturer of asphalt emulsions and pavement sealers; outdoor equipment and product storage, asphalt filling station, approx. 35 ASTs	X	X
12	Jones Grading & Excavating	3716 Big Bend Industrial Court	Construction grading and excavation; outdoor equipment and material storage, ASTs	X	X
13	Laclede Gas Company	4118 Shrewsbury Avenue	Natural gas distribution and former manufactured gas plant; outdoor equipment and material storage, underground and above ground gas distribution system, USTs, ASTs; CERCLIS (Superfund), FMGP, LUST, ERNS, SPILLS	X	X

Sources: EDR, Inc. and Burns &amp; McDonnell, 2012

**Table 4-18: Sites of Potential and Recorded Environmental Concern Within the Study Area (cont.)**

				Potential Material	
General Activity Description, Site Features, and Database				Hazardous	Solid
Site ID	Property Name	Location	Listings	Substances	Waste
COMMERCIAL AND INDUSTRIAL PROPERTIES (cont.)					
14	Carr Lane Properties	4100/4200/4210 Carr Lane Court	Production casting, art fabrication, and formwork; outdoor material, chemical, and waste storage; ASTs, USTs	X	X
15	Former Shrewsbury Gas Holder Property	4216 Carr Lane Court	Former location of large gas storage tanks that supported the Laclede Manufactured Gas Plant; ASTs/USTs removed, possible underground vaults and/or pipes present; lead contamination; CERCLIS (Superfund), FMGP, LUST, ERNS, SPILLS	X	X
16	Laclede Gas Company	4250 Carr Lane Court	High pressure natural gas distribution facility; aboveground and underground gas distribution lines and pressure regulating equipment; CERCLIS (Superfund), FMGP, LUST, ERNS, SPILLS	X	X
17	Boy Scouts of America/Explorer Post 336	7303 Melbourne Avenue	Vehicle and equipment storage, ASTs	X	X
18	Shrewsbury Public Works Facility	7309 Melbourne Avenue	Municipal maintenance facility; outdoor equipment and materials storage, ASTs; cell tower	X	X
19	Tri-Square Construction, Inc.	7267 Sutherland Avenue	General construction; outdoor equipment and material storage		X
20	Brite Sign & Electric/Auto Service	7219 Murdoch	Sign installation, former asphaltic concrete business; outdoor vehicle and equipment storage; LUST	X	X
TRANSPORTATION					
21	Burlington Northern and Santa Fe Railroad Company	Various linear rights-of-way	Freight rail transportation corridors; maintenance equipment and materials, spills, waste dumping	X	X
22	Union Pacific Railroad Company	Various linear rights-of-way	Freight rail transportation corridors; maintenance equipment and materials, spills, waste dumping	X	X
23	MetroLink	Various linear rights-of-way	Light rail transit corridors, stations, and parking areas; operating and maintenance materials		X

Sources: EDR, Inc. and Burns &amp; McDonnell, 2012

### 4.10.3 Environmental Consequences

#### 4.10.3.1 No Build

The No Build Alternative would not result in the acquisition of right-of-way or in construction activities that would affect any of the properties of environmental concern listed in Table 4-18. Operations at these facilities would continue normally within the current regulatory framework. Disposal of hazardous substances and solid wastes would continue under current regulations. The potential redevelopment of vacant parcels, including the Former Shrewsbury Gas Holder Property (FMGP), would occur in conformance with established regulations and covenants.

#### 4.10.3.2 Build Alternatives

##### Build Alternative 1

For the majority of the properties affected by Build Alternative 1 listed in Table 4-19, impacts would include the removal of a building or acquisition of right-of-way that could require the removal or relocation of a UST or AST. Further investigation may be required at these sites to characterize the type of soil or groundwater contamination that may be present as a result of current or past uses of each property. If regulated solid or hazardous substances are found unexpectedly during construction activities, the County and/or MoDOT construction inspector would direct the contractor to cease work at the suspect site. The contractor would develop a plan for sampling, remediation if necessary, and continue project construction. If necessary, the MDNR and/or USEPA would be contacted for coordination and approval of required remediation activities. The contractor would be responsible for implementing and maintaining appropriate worker safety precautions, as required by the Occupational Safety and Health Administration (OSHA).

Based on review of the site remediation reports prepared for the FMGP property, very little data is available documenting the area directly affected by the alignment of Build Alternative 1. Because of the uncertainty in the level of soil contamination present on the site within the proposed alignment, additional sampling would be required prior to initiating construction activities in that area. Additional costs may be incurred to address the potential contamination. Because the alignment passes across the area included in the 2003 deed restriction, extensive coordination with the USEPA will be required as design of the South County Connector proceeds to determine the potential for encountering and removing contaminated soils on the property. In compliance with the 2003 deed restriction, USEPA will need to review and approve the location of roadway improvements, including the use of embankment fill, construction of foundations and/or piers, and excavation for utilities and other improvements.

On Laclede Gas Company (FMGP) property, all construction activities will need to conform to the procedures outlined in the *Restricted Area Access and Operation Procedure for the Site of the Laclede Gas Company's Former Manufactured Gas Plant* (Soil Management Plan) prepared by Laclede in conformance with the AOC. All excavated material would need to be used on-site or transported off-site for proper disposal. No soils would be allowed to be transported off-site for re-use.

Build Alternative 1 would also cross the Former Shrewsbury Gas Holder Property, a Brownfield site subject to coordination under MDNR's BVCP. Although soils have been remediated within the property boundary, additional sampling and treatment may be required for any soils excavated during construction on the property. The B-7 Lead Containment Area Cap (noted in the 2010 Environmental Covenant issued for the property) shall not be breached or disturbed by any construction activity. Like the Laclede Gas Property, all excavated material would need to

be used on-site or transported off-site for proper disposal. No soils would be allowed to be transported off-site for re-use.

**Table 4-19: Properties of Potential Environmental Concern Affected by Build Alternative 1**

Site ID	Property Name	Environmental Conditions	Build Alternative 1		Recommendations
			Direct Impact	Indirect Impact	
1	Phillips 66 and Car Wash	USTs present, no spills or leaks reported. Unknown site conditions.	X		Initial site assessment recommended.
2	St. Louis Tag Company	UST present, no spills or leaks reported. Unknown site conditions.	X		Initial site assessment recommended.
3	Conoco Station	USTs present, known petroleum impact to soils (LUST).	X		Initial site assessment recommended; tank removal and soil remediation may be required. Coordination with MDNR required.
5	Bono Burns Distribution	Unknown site conditions.		X	Access to property may be modified as result of project, if right-of-way is required, an initial site assessment recommended.
6	RJP Electric	Unknown site conditions.	X		Initial site assessment recommended.
7	Overhead Door (Big Bend Industrial Court)	Unknown site conditions.	X		Initial site assessment recommended.
7	Overhead Door (Shrewsbury Avenue)	Unknown site conditions.	X		Initial site assessment recommended.
8	St. Louis Paving Company	ASTs present, no spills or leaks reported. Moderate potential for contaminated soils.		X	Initial site assessment recommended.
9	Terry's Towing	ASTs and UST present, no spills or leaks reported, moderate potential for impacted soils. Unknown site conditions.	X		Initial site assessment recommended.
10	Barcliff's Towing	Unknown site conditions.	X		Initial site assessment recommended.
11	Bi-State Emulsions, Inc.	ASTs, underground piping, and asphalt filling station present. High potential for contaminated soils. Unknown site conditions.	X		Initial site assessment recommended; tank removal and soil/groundwater remediation may be required.

Source: Burns &amp; McDonnell Analysis, 2012

**Table 4-19: Properties of Potential Environmental Concern Affected by Build Alternative 1 (cont.)**

Site ID	Property Name	Environmental Conditions	Build Alternative 1		Recommendations
			Direct Impact	Indirect Impact	
12	Laclede Gas Company (FMGP)	Former Manufactured Gas Plant, CERCLIS (Superfund), past remediation completed requiring deed restriction to be placed on property. Residual soil and groundwater contamination is present.	X		USEPA coordination required as project moves through design and construction. Construction methods required to comply with soil management plan in place at facility. Testing and remediation during construction required.
15	Former Shrewsbury Gas Holder Property	Brownfield Site, remediation completed in 2010. Lead contaminated soil capped on-site. High potential for residual soil and groundwater contamination.	X		MDNR coordination required under BVCP. Testing and remediation during construction required.
16	Laclede Gas Company (high pressure gas facility)	Located within boundary of Former Shrewsbury Gas Holder Property (Brownfield). High potential for residual soil and groundwater contamination.		X	If facility is affected or bridged, coordination required with Laclede Gas Company and MDNR. Monitoring during construction may be required.
18	Shrewsbury Public Works Facility	ASTs present, no spills or leaks reported. Unknown site conditions.		X	If right-of-way required, testing recommended.
21	BNSF	No spills or leaks reported. Potential for soil contamination with the right-of-way based on historic use. Unknown site conditions.		X	If right-of-way required, testing recommended.
22	UPRR	No spills or leaks reported. Potential for soil contamination with the right-of-way based on historic use. Unknown site conditions.		X	If right-of-way required, testing recommended.
23	MetroLink	No spills or leaks reported. Unknown site conditions within right-of-way and vehicle parking areas.	X		If right-of-way required, initial site assessment recommended.

Source: Burns &amp; McDonnell Analysis, 2012



### Alternative 2

For the majority of the properties affected by Alternative 2 listed in Table 4-20, impacts would include the removal of a building or acquisition of right-of-way that could require the removal or relocation of a UST or AST. Further investigation may be required at these sites to characterize the type of soil or groundwater contamination that may be present as a result of current or past uses of each property. If regulated solid or hazardous substances are found unexpectedly during construction activities, the County and/or MoDOT construction inspector would direct the contractor to cease work at the suspect site. The contractor would develop a plan for sampling, remediation if necessary, and continue project construction. If necessary, the MDNR and/or USEPA would be contacted for coordination and approval of required remediation activities. The contractor would be responsible for implementing and maintaining appropriate worker safety precautions, as required by OSHA.

Alternative 2 would displace the ASTs and underground piping system on the Bi-State Emulsions, Inc. property, located on Big Bend Industrial Court. Extensive soil and groundwater sampling would be required as part of the property acquisition process to determine the level of contamination present within the limits of the proposed construction. If contamination exists, a remediation plan would need to be developed and implemented prior to beginning construction of the South County Connector.

Alternative 2 also would cross the eastern edge of the Laclede Gas Company (FMGP) property. According to the Removal Site Evaluation Report completed in 1995, this area of the property may have some of the highest concentrations of soil contaminants present on the site. There is a high likelihood that impacted soils will be encountered in this location. Additional sampling and possible remediation would be required prior to initiating construction activities in that area. Additional costs may be incurred to address the potential contamination. Because the alignment passes across the area included in the 2003 deed restriction, extensive coordination with the USEPA will be required as design of the South County Connector proceeds to determine the potential for encountering and removing contaminated soils on the property. Under the 2003 deed restriction, USEPA will need to review and approve the location of roadway improvements, including the use of embankment fill, construction of foundations and/or piers, and excavation for utilities and other improvements.

On Laclede Gas Company (FMGP) property, all construction activities will need to conform to the procedures outlined in the Soil Management Plan prepared by Laclede in conformance with the AOC. All excavated material would need to be used on-site or transported off-site for proper disposal. No soils would be allowed to be transported off-site for re-use.

In addition, Alternative 2 would cross the Former Shrewsbury Gas Holder Property, a Brownfield site subject to coordination under MDNR's BVCP. Although soils have been remediated within the property boundary, additional sampling and treatment may be required for any soils excavated during construction on the property. The B-7 Lead Containment Area Cap (noted in the 2010 Environmental Covenant issued for the property) shall not be breached or disturbed by any construction activity. Like the Laclede Gas Property, all excavated material would need to be used on-site or transported off-site for proper disposal. No soils would be allowed to be transported off-site for re-use.

**Table 4-20: Properties of Potential Environmental Concern Affected by Build Alternative 2**

Site ID	Property Name	Environmental Conditions	Build Alternative 2		Recommendations
			Direct Impact	Indirect Impact	
1	Phillips 66 and Car Wash	USTs present, no spills or leaks reported. Unknown site conditions.	X		Initial site assessment recommended
2	St. Louis Tag Company	UST present, no spills or leaks reported. Unknown site conditions.	X		Initial site assessment recommended.
3	Conoco Station	USTs present, known petroleum impact to soils (LUST).	X		Initial site assessment recommended; tank removal and soil remediation may be required. Coordination with MDNR required.
5	Bono Burns Distribution	Unknown site conditions.		X	Access to property may be modified as result of project, if right-of-way is required, an initial site assessment recommended.
6	RJP Electric	Unknown site conditions.	X		Initial site assessment recommended.
7	Overhead Door (Big Bend Industrial Court)	Unknown site conditions.	X		Initial site assessment recommended.
8	St. Louis Paving Company	ASTs present, no spills or leaks reported. Moderate potential for contaminated soils.		X	Initial site assessment recommended.
8	Terry's Towing	ASTs and UST present, no spills or leaks reported, moderate potential for impacted soils. Unknown site conditions.	X		Initial site assessment recommended.
10	Barcliff's Towing	Unknown site conditions.	X		Initial site assessment recommended.
11	Bi-State Emulsions, Inc.	ASTs, underground piping, and asphalt filling station present. High potential for contaminated soils. Unknown site conditions.	X		Initial site assessment recommended; tank removal and soil/groundwater remediation may be required.

Source: Burns &amp; McDonnell Analysis, 2012

**Table 4-20: Properties of Potential Environmental Concern Affected by Build Alternative 2 (cont.)**

Site ID	Property Name	Environmental Conditions	Build Alternative 2		Recommendations
			Direct Impact	Indirect Impact	
13	Laclede Gas Company (Superfund Site)	Former Manufactured Gas Plant, CERCLIS (Superfund), past remediation completed requiring deed restriction to be placed on property. Residual soil and groundwater contamination is present.	X		USEPA coordination required as project moves through design and construction. Construction methods required to comply with soil management plan in place at facility. Testing and remediation during construction required.
15	Former Shrewsbury Gas Holder Property	Brownfield Site, remediation completed in 2010. Lead contaminated soil capped on-site. High potential for residual soil and groundwater contamination.	X		MDNR coordination required under BVCP. Testing and remediation during construction required.
16	Laclede Gas Company (high pressure gas facility)	Located within boundary of Former Shrewsbury Gas Holder Property (Brownfield). High potential for residual soil and groundwater contamination.		X	If facility is affected or bridged, coordination required with Laclede Gas Company and MDNR. Monitoring during construction may be required.
18	Shrewsbury Public Works Facility	ASTs present, no spills or leaks reported. Unknown site conditions.		X	If right-of-way required, testing recommended.
21	BNSF	No spills or leaks reported. Potential for soil contamination with the right-of-way based on historic use. Unknown site conditions.		X	If right-of-way required, testing recommended.
22	UPRR	No spills or leaks reported. Potential for soil contamination with the right-of-way based on historic use. Unknown site conditions.		X	If right-of-way required, testing recommended.
23	MetroLink	No spills or leaks reported. Unknown site conditions within right-of-way and vehicle parking areas.	X		If right-of-way required, initial site assessment recommended.

Source: Burns &amp; McDonnell Analysis, 2012

#### 4.10.4 Mitigation Measures

The South County Connector is located in an area with a long history of industrial and commercial land use. Soil and groundwater contamination may be present throughout the project area. Encountering soil and groundwater during construction without prior knowledge can affect the project in terms of cost, schedule, and agency and public relations. In addition, the acquisition of properties with contaminated soil and groundwater by the County and/or MoDOT for right-of-way can lead to liability concerns related to remediation of those properties. The following recommended avoidance, minimization, and mitigation measures should be considered for Build Alternatives 1 and 2.

If the acquisition of properties or rights-of-way from properties of environmental concern cannot be avoided, additional sampling and testing of soils within the proposed footprint of the South County Connector would be conducted to determine the level of contamination and any required remediation acceptable for use as public right-of-way. This process would allow any contamination encountered to be characterized, removed, treated, and buried or contained by trained professionals following applicable regulations prior to initiating roadway construction.

#### 4.11 SECTION 4(F) PROPERTIES

Section 4(f)<sup>45</sup> is the term used to refer to the U.S. Department of Transportation (USDOT) restrictions on use of certain publicly owned land and historic sites. Section 4(f) lands include publicly owned parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance. Section 4(f) also protects historic sites of national, state, or local significance, whether publicly or privately owned.

If it is determined that an action would impact a Section 4(f) resource, then the lead federal agency, in this case the FHWA, is required to prepare a Section 4(f) Evaluation. The USDOT is ultimately responsible for making all decisions related to Section 4(f) compliance. These include whether Section 4(f) applies to a property, whether a use will occur, assessment of each alternative's impacts to Section 4(f) properties, and determining whether the law allows the selection of a particular alternative after consulting with the appropriate officials with jurisdiction over the property.

Another law, Section 6(f) of the Land and Water Conservation Fund (LWCF) Act, protects recreational lands that were purchased or improved using funding from the LWCF. Any conversion of Section 6(f) lands must be compensated with replacement lands of equal value, location, and usefulness.

While there are no Section 6(f) properties located within limits of the project study area, there are Section 4(f) properties. These include two publicly owned parks (River Des Peres Park and Deer Creek Park) and two publicly owned trails (River Des Peres Greenway Trail and Deer Creek Trail) that would be impacted by the proposed Build Alternatives. These Section 4(f) recreational resources are depicted on Exhibits 4-15 and 4-16. There are also 13 historic sites located in proximity of the project that are protected under Section 4(f), some of which would be adversely impacted by the proposed Build Alternatives, as presented in Section 4.9, Cultural Resources.

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<sup>45</sup> Section 4(f) refers to Section 4(f) of the Department of Transportation Act of 1966. The language has since been amended and what is generally referred to as Section 4(f) is now codified in 49 USC 303, Policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites.

Therefore, a separate Section 4(f) Evaluation has been prepared in accordance with FHWA guidance<sup>46</sup> and information provided in FHWA's Section 4(f) Policy Paper, dated July 20, 2012. A copy of the Draft Section 4(f) Evaluation is included in Appendix H of this Draft EIS.

## 4.12 VISUAL IMPACTS

The appearance of man-made and natural environments has a great impact on the perception of a community. The viewsheds<sup>47</sup> of a community can be influenced heavily from the creation of man-made features. With this in mind it is important to anticipate the visual effect that new construction and development will incur on a community. The visual impact analysis for this EIS was conducted to determine the negative impact, if any, on the viewsheds throughout the proposed road corridor and how it will affect the primary viewers<sup>48</sup>.

The first step in the visual impact analysis, after determining the approximate route of the roadway, was to visit the proposed road corridor area and inventory the existing views that would be affected by the proposed roadway. In order to determine which areas along the corridor would most likely be affected, an initial viewshed analysis was performed.

The initial viewshed analysis was performed by using GIS<sup>49</sup> computer generated viewshed analyses to map anticipated view areas that could potentially be affected by the proposed roadway. The analysis was generated by using the existing elevation data for the area and anticipated spot elevations along the proposed road corridor to map the approximate areas which the proposed road would be visible. It should be noted that the computer generated viewshed analysis was created using terrain data, the presence of vegetation and existing man-made structure would further influence the viewshed. This analysis, combined with existing land use studies, was used as a starting point to determine which locations in the viewshed have the most potential for being affected by the roadway, and which should be more closely investigated. Figure 4-12 shows a map of the initial viewshed analysis area.

After the viewshed analysis was completed, a field visit of the entire proposed roadway corridor was conducted. The existing viewshed conditions were observed and catalogued by taking images and noting key characteristics. The notes and images were then compiled and evaluated to develop an analysis of the existing viewshed conditions. From the analysis of existing conditions, the environmental consequences of the Build Alternatives could be forecasted.

### 4.12.1 Affected Environment

The viewshed surrounding the South County Connector project area generally extends from the intersections of Hanley and Laclede Station Roads to River Des Peres Boulevard. This corridor contains a variety of primary viewers that could potentially be affected by the roadway, including retail businesses, industrial users, recreational users, travelers, and single-family and multi-family residences. The residential viewers in the viewshed were deemed to be the most sensitive to visual alterations. With the most sensitive viewers in mind, the initial viewshed analysis was used to determine key vantage points for further on-site investigation, as shown in

<sup>46</sup> Technical Advisory T6640.8A, Guidance for Preparing Environmental and Section 4(f) Documents, FHWA, October 30, 1987.

<sup>47</sup> A viewshed describes the environment that can be viewed from certain vantage points.

<sup>48</sup> Primary viewers include people who most commonly experience the environment. This includes surrounding residents, businesses, recreational users, and roadway travelers.

<sup>49</sup> GIS (Geographic Information System) is specially designed software for geographical mapping and environmental analysis tasks.



Figure 4-12, Viewshed Analysis Map. The existing conditions visible at the key vantage points are shown and described in this section.

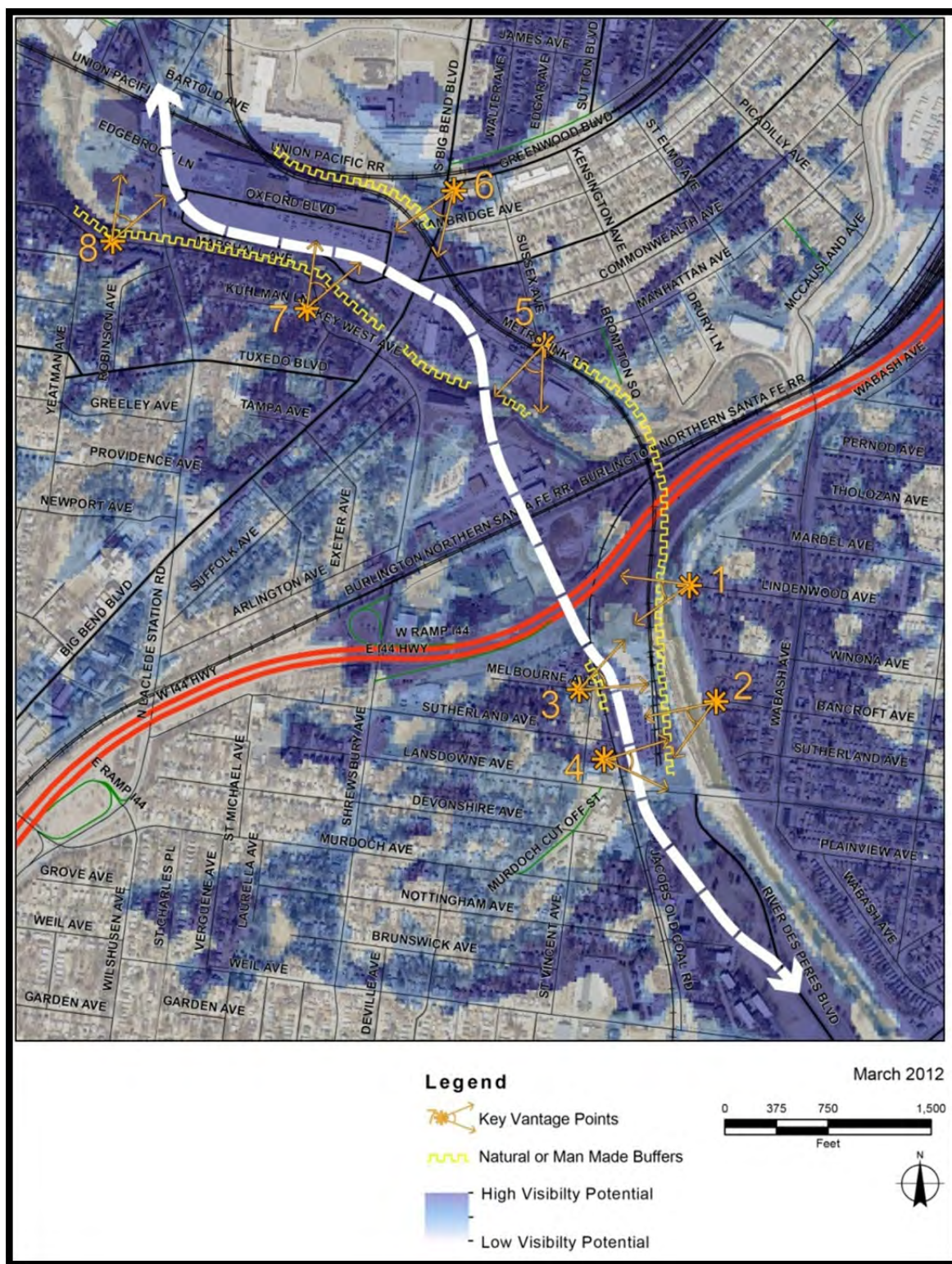


Figure 4-12: Viewshed Analysis Map



#### 4.12.1.1 Key Vantage Point (KVP) #1

This vantage point is located on the western edge of a single family residential area (Wabash neighborhood) on Lindenwood Avenue east of the Shrewsbury MetroLink Station and east of River des Peres. The existing view is dominated by existing overhead utilities, the elevated MetroLink crossing over Interstate 44, and River des Peres. Terrain and structures block any background views.



Figure 4-13: Key Vantage Point #1



Figure 4-14: Key Vantage Point #1

#### 4.12.1.2 Key Vantage Point (KVP) #2

The KVP 2 is also located on the western edge of the Wabash neighborhood, further south on Bancroft Avenue. KVP 2 has an existing viewshed that is dominated by the Shrewsbury MetroLink Station. The foreground consists primarily of River des Peres and the Shrewsbury MetroLink Station, with views of utilities in the background.



Figure 4-15: Key Vantage Point #2



Figure 4-16: Key Vantage Point #2



#### 4.12.1.3 Key Vantage Point (KVP) #3

KVP 3 is located at the eastern end of a single-family residential area on Melbourne Avenue in Shrewsbury, west of the Shrewsbury MetroLink Station and the BNSF Railroad. At this vantage point the viewshed overlooks the Shrewsbury MetroLink Station and the BNSF Railroad line; however, the view is mostly blocked by existing vegetation and hidden by the terrain.



Figure 4-17: Key Vantage Point #3



Figure 4-18: Key Vantage Point #3

#### 4.12.1.4 Key Vantage Point (KVP) #4

This vantage point is located at businesses near the intersection of Lansdowne Avenue and St. Vincent Avenue. At this vantage point, the viewshed overlooks the Shrewsbury MetroLink Station and the existing BNSF Railroad line. The foreground is dominated by overhead utilities and the existing rail line.



Figure 4-19: Key Vantage Point #4



Figure 4-20: Key Vantage Point #4



#### 4.12.1.5 Key Vantage Point (KVP) #5

This vantage point is located on the southern edge of a single-family residential area near the intersection of Sussex Avenue and Manhattan Avenue. At this vantage point, the viewshed overlooks Big Bend Industrial Court. The view is dominated and blocked by the existing MetroLink light rail, industrial buildings and components, and terrain. Overhead utilities further add to the disturbance of existing views.



Figure 4-21: Key Vantage Point #5



Figure 4-22: Key Vantage Point #5

#### 4.12.1.6 Key Vantage Point (KVP) #6

This vantage point is located at the intersection of Greenwood Boulevard and Big Bend Boulevard. To the east of this intersection are multi-family and single-family residential areas. This view overlooks Big Bend Boulevard and Deer Creek Center. This vantage point is dominated by the MetroLink overpass and overhead utilities. The wooded Deer Creek natural drainage corridor serves as a background for this vantage point.



Figure 4-23: Key Vantage Point #6



**4.12.1.7 Key Vantage Point (KVP) #7**

This vantage point is located at the single-family residential area along Marshall Avenue, near the cross street of Kuhlman Lane. This vantage point is dominated by vegetation along Deer Creek. The vegetation mostly buffers the views of the adjacent Deer Creek Center to the north.



Figure 4-24: Key Vantage Point #7



Figure 4-25: Key Vantage Point #7



#### 4.12.1.8 Key Vantage Point (KVP) #8

This vantage point is located at the multi-family area along Marshall Avenue, near the intersection of Laclede Station Road. This vantage point overlooks Deer Creek and the adjacent retail center to the North. The vegetation mostly buffers the views of the adjacent Deer Creek Center, but the views are more exposed near the intersection.



Figure 4-26: Key Vantage Point #8



Figure 4-27: Key Vantage Point #8

#### **4.12.2 Environmental Consequences**

Based upon existing land use characteristics, primary viewers, activities, and location, the expected visual impacts for the No Build and Build Alternatives are presented for each section of the project.

##### **4.12.2.1 No Build**

###### North Section

The No Build Alternative would not physically alter the existing visual characteristics of the area. Existing conditions that would remain the same would include the following:

- Expansive parking area for Deer Creek Center.
- Deer Creek Center structures.
- Deer Creek and wooded area that screens Deer Creek Center from residences to the south, provides a high quality view.
- MetroLink rail line overpassing the area blocks views from businesses and residential areas to the north of this section.

###### Central Section

The No Build Alternative in this section would not physically alter the existing visual characteristics of the area. Existing conditions that would remain the same would include the following:

- MetroLink rail line overpassing the area blocks views to and from residential areas to the north of this section.
- Low quality views of industrial buildings, industrial components and tanks, and lots to serve as storage space for industrial users.
- Vacant land north of Interstate 44 where the previous natural gas tanks were located could be developed for future industrial uses.
- Overhead utilities present throughout much of the section.
- No notable high quality views in this area.

###### South Section

The viewsheds in this section would likely remain the same under the No Build Alternative, would include the following:

- The River Des Peres Park provides high quality aesthetic views with open green space and mature vegetation.
- River des Peres will remain visible to primary users of the area.
- Overhead utilities present throughout much of the section.
- The Shrewsbury MetroLink Station is a major dominating visual feature of this area. The elevated section of the MetroLink rail line in this area blocks views to and from residential areas to the east of this section.
- Interstate 44 lies to the north of this section, creating a physical and visual barrier.



#### **4.12.2.2 Build Alternatives**

##### North Section

Build Alternatives 1 and 2 in this area would have a low impact throughout this section. Anticipated visual impacts on this corridor include the following:

- The roadway would generally follow the existing topography throughout the section minimizing unwanted views of the road.
- The proposed roadway would be located in areas that currently are used as parking for Deer Creek Center.
- The northern edge of this section will not be adversely affected by the roadway. The MetroLink overpass buffers views to and from the section to the north.
- The wooded area along Deer Creek provides high quality views from the proposed roadway, while also serving as a visual buffer for views of the roadway from residential areas to the south of the section.
- The addition of streetscape elements such as landscaping and street trees could greatly improve the aesthetic appeal of this section.

##### Central Section

Although Build Alternatives 1 and 2 in this area would have a large amount of visual alteration, there would be a low impact throughout this section, because the primary viewers are predominately industrial users. Anticipated visual impacts on this corridor include the following:

- The proposed roadway will bisect the Laclede Gas property (Build Alternative 1) or the existing Big Bend Industrial Court (Build Alternative 2). The presence of a new roadway is not anticipated to adversely affect the remaining industrial property users.
- Views to and from the proposed roadway to the residential areas to the north will be buffered by the existing terrain and the MetroLink rail line overpass.
- The most notable visual changes will be the elevated roadway structures in this area required to span Deer Creek and Interstate 44. These structures are expected to have a low visual impact to surrounding industrial properties and Interstate 44 travelers.
- Views from the proposed roadway to the surrounding industrial properties may not be desirable, but could be enhanced with landscaping and street trees.

##### South Section

Build Alternatives 1 and 2 in this area would have a low impact throughout this section. Anticipated visual impacts on this corridor include the following:

- The elevated structure and interchange required to span Interstate 44 would provide the highest level of visual change, but will have low impact on surrounding views of the proposed roadway. The users of Interstate 44 and industrial users surrounding the proposed interchange will be most visually impacted.
- The proposed roadway will be placed along the western portion of the Shrewsbury MetroLink Station parking lot. Views of the roadway from residential areas to the east and west will be buffered by vegetation, terrain, the BNSF Railroad, and existing infrastructure for the MetroLink Station and rail line.

- Shortly after passing the Shrewsbury MetroLink Station, the proposed roadway will connect to the existing River Des Peres Boulevard. There would be minimal visual impacts on the existing high quality views of River Des Peres Park.
- The proposed roadway changes will not significantly alter views to and from the Mackenzie Pointe Shopping Center.

#### **4.12.3 Mitigation Measures**

This visual impact analysis has determined that the proposed road corridor will have an overall low impact on the existing visual quality of the study area. Certain design features could be incorporated into the roadway planning and design process to help improve the aesthetics of the roadway corridor and minimize views of the roadway from sensitive users such as surrounding residents and recreational users.

Specific design measures to enhance the potential visual impacts of the proposed roadway would be determined during the design phase of the project. Potential urban design measures that could be considered to enhance the visual impact of the roadway and to improve the existing visual conditions include the following:

- Preserve or enhance the existing vegetation buffer along Deer Creek to help screen the proposed roadway from surrounding residential areas.
- Include landscaping and other site amenities as part of the final design for the roadway. Landscaping and other site amenities could include street trees, groundcover, shrubbery, and/or decorative street lighting. Additional special features such as site furnishings and rain gardens can be included where applicable to further enhance the environmental quality of the roadway corridor. The County and MoDOT would enter into cost share and maintenance agreements with local stakeholder groups for installation and maintenance of amenities.

#### **4.13 CONSTRUCTION IMPACTS**

This section identifies potential construction impacts of the alternatives and methods to minimize any impacts using mitigation measures. Construction impacts would result from utility relocations, building the proposed roadway improvements, and other related construction activities, which are commonly short-term and temporary in nature. Typical construction impacts may include air, water, and noise pollution and disposal of construction debris. Surface transportation traffic patterns in the project area may also be altered during construction.

MoDOT has developed a series of Standard Specifications for Highway Construction. These specifications include, but are not limited to, air, noise, and water pollution control measures to minimize construction impacts. The Standard Specifications for Highway Construction also include traffic control and safety measures. The County and MoDOT would implement these standards as a part of the construction of the on the proposed project.

The following sections are applicable to both of the Build Alternatives.

##### **4.13.1 Air Quality**

Construction activity would cause temporary air quality impacts. These short-term effects would include increased emissions from heavy diesel construction vehicles and equipment, and increased dust from grading operations. Emissions from construction vehicles and equipment

would be controlled in accordance with emission standards prescribed under state and federal regulations. Dust generated by construction activities would be minimized by the implementation of dust control measures, such as water sprinkling and applications of calcium chloride to control dust and other airborne particulates. Contractors would be required to comply with Missouri's statutory regulations regarding air pollution control and adherence to construction permit and contract conditions.

#### **4.13.2 Water Quality**

Water quality impacts during construction activities could include increased sediments in Deer Creek and River des Peres due to runoff from erodible material exposed during clearing and grubbing, excavation, and borrow and fill operations. Storm water runoff is addressed by MoDOT's Sediment and Erosion Control Program, which would be included within the contract specifications to address temporary erosion and sedimentation during construction. The following best management practices should reduce impacts to the aquatic environment to a minimal level:

- Grade and seed disturbed areas as soon as possible;
- Minimize disturbances to the stream banks and riparian zones; and
- Avoid work in stream channels from the beginning of March to mid-June as much as possible and practicable; and undertake all necessary precautions to prevent petroleum products from entering streams.

In addition, restoration work would include cleanup, shaping, replacement of topsoil, and establishment of vegetative cover on all disturbed bare areas, as appropriate.

#### **4.13.3 Noise**

Noise from heavy construction equipment and haul trucks would result in unavoidable short-term impacts. Residents adjacent to the roadway would be most impacted by construction noise. In an effort to minimize the effects during construction, contractors may be required to equip and maintain muffling equipment for trucks and other machinery in order to minimize noise emissions. Operations with high temporary noise levels such as pile driving may need to have abatement restrictions placed upon it such as work-hour controls and maintenance of muffler systems.

#### **4.13.4 Waste Disposal**

Specifications and procedures for the disposal of wastes resulting from construction activity would be developed with consideration given to the MDNR Solid Waste Management Program. This program emphasizes the need to develop uses and markets for recycled and recyclable materials in construction activities. These materials could include, but are not limited to, waste tires, rubberized asphalt, ground glass subgrade, structural steel, plastic lumber, and paints that utilize recycled glass. Further, any potential hazards in the right-of-way would be identified and handled in accordance with all applicable regulations. In addition, the construction specifications would include requirements to prohibit the contractor from disposing of any pollutants, such as fuels, lubricants, raw sewage, or other harmful substances, inappropriately.

Impacts would be mitigated by adherence to construction permit and contract conditions. Materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained) would be removed from the project, or otherwise properly disposed of by the contractor. It is anticipated that there would not be excess fill for the project that would need to

be disposed. Fill material or borrow needed for construction of the project would be determined by the contractor, including the source and disposition of borrow, as well as any environmental requirements.

Construction impacts would be more fully known when more detailed design plans have been completed. St. Louis County and MoDOT would work with the public to address concerns during the final design process and would provide further coordination with potentially impacted businesses and residences.

#### **4.14 LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

The proposed South County Connector is the culmination of many years of transportation planning at the local and state level. Previous studies have identified the need for improved north-south connectivity in the central area of St. Louis County. Interstate 170 and Hanley Road fulfilled the need for north-south connectivity north of Interstate 64 (Highway 40). North-south connectivity is discontinuous south of Interstate 64.

##### **4.14.1 No Build Alternative**

The No Build Alternative will have no effect on the local short-term uses of the environment, and would avoid short-term and localized construction impacts.

There will be no short-term use of the environment beyond what occurs now or what would be expected for minor road improvements such as resurfacing.

The No Build Alternative will not enhance long-term productivity. Access will remain limited to Deer Creek Center under the No Build Alternative. Access to commercial areas in Shrewsbury will remain limited. The continued heavy traffic volumes on existing local roads, particularly Shrewsbury Avenue and Lansdowne Avenue, will not promote walking and livability in the community. This condition will likely worsen as traffic volumes increase.

Increased congestion on local roads and on major arterials in the vicinity will result in a loss of productivity. Under the No Build Alternative, there will be loss of productivity due to continued congestion at the interchange complex of Murdoch Avenue and Interstate 44, which is made worse by the proximity (less than 200 feet) of Big Bend Boulevard and Laclede Station Road to Interstate 44. Existing and proposed businesses in the area will continue to suffer due to congestion and the lack of a full interchange with Interstate 44 in the vicinity.

Under the No Build Alternative, the MetroLink Light Rail Transit system will likely not see significant ridership increases from western suburbs due to the current difficulty in accessing the Shrewsbury MetroLink Station from the west. Developing the Shrewsbury MetroLink Station into a hub for proposed Bus Rapid Transit, bus transit on the Interstate 44 corridor and light rail transit will likely not realize its full potential due to difficulty in accessing the Station from Interstate 44.

Under the No Build Alternative, the projected traffic growth in the Core Study Area will reduce the operational capacity of existing facilities, resulting in reduced traffic safety, mobility and possible loss of economic growth opportunities.

#### 4.14.2 Build Alternatives

Both of the Build Alternatives will affect the local short-term uses of the environment and the maintenance and enhancement of long-term productivity. The proposed South County Connector will require the investment or commitment of some resources.

The need for improved transportation connectivity between South St. Louis County, the central core area of St. Louis County and north central St. Louis County has been included in comprehensive planning documents for St. Louis County. A freeway type connection, the Inner-belt Expressway, was first proposed for the region in 1957. Portions of this proposed inner-belt were constructed as Interstate 170, from Interstate 64 north to Interstate 270. Original proposals called for connecting Interstate 170 to Manchester Road, Interstate 44, Highway 30 (Gravois) and ultimately terminating at an interchange with Interstate 55 in South St. Louis County.

The need for north-south connectivity was also partially met by Hanley Road, generally from the intersection of Hanley Road and Manchester Road (Route 100) north through Clayton to Interstate 270. Interstate 170 and Hanley Road serve the western and eastern ends, respectively, of the Clayton central business district. Clayton is the County Seat of St. Louis County.

Interstate 170 terminates at Interstate 64, just south of the Clayton business district. Traffic must continue south on Hanley Road, approximately one-quarter mile to the east of the terminus of Interstate 170. Some traffic continues south on Brentwood Boulevard, which terminates just south of Manchester Road. There is limited north-south connectivity south of Manchester Road, and particularly south of Interstate 44.

In the 1990s, the decision was made not to continue Interstate 170 south of Interstate 64. North of the Clayton area, Interstate 170 passed through land that was underutilized, or had few impacts. South of Interstate 64, an extension of Interstate 170 would have passed through highly utilized industrial areas. South of Interstate 44, an extension of Interstate 170 would have passed primarily through residential areas. The decision to not continue Interstate 170 south of Interstate 64 was due in part to the likely disruption and adverse impacts a limited access highway would have caused to neighborhoods.

The need for north-south connectivity remained however, with traffic volumes on Hanley Road at Manchester Road, approximately one mile south of Interstate 64, reaching as high as 45,000 ADT. The need for this transportation improvement providing north-south connectivity was documented by several State and local transportation plans that considered the need for present and future traffic movement within the context of present and future land use development and the environment. These plans include:

- **Cross-County Corridor Major Transportation Investment Analysis** - Prepared for the Missouri Department of Transportation (MoDOT) and the East-West Gateway Coordinating Council (now the East-West Gateway Council of Governments). This study was completed in 1998 and supported the extension of the MetroLink Light Rail Transit system to Clayton and to Shrewsbury. This study also identified the need for surface arterials to function as the de-facto extension of Interstate 170 south of Interstate 64, providing access in the crowded central corridor.
- **Shrewsbury Planning Study** - Prepared for MoDOT in 2004, this report studied options for improved access to Interstate 44 in the vicinity of Shrewsbury, improved

access to the Shrewsbury MetroLink Station, and improved arterial road connectivity to the surrounding communities.

- **Hanley Road Corridor Study** - Completed in 2004 for St. Louis County, this study identified improvements along Hanley Road to handle the increased traffic volumes between Interstate 64 to Interstate 44 and points southward.
- **Metro South Study** - This study was conducted by Metro, the transit agency for the region, MoDOT and East-West Gateway in cooperation with the Federal Transit Administration. This was an update on an earlier study conducted for the same agencies in 2000. This report identified potential options for extending MetroLink South of Shrewsbury. The study also identified needed surface road improvements.
- **St. Louis County Arterial Study – South Study Area** - Completed in 2005, this study identified improvements needed to reduce congestion and improve north-south connectivity. In addition to supporting the need for the South County Connector and a full interchange with Interstate 44, this study identified minor and major geometric and capacity improvements, intersection and arterial signalization improvements and other traffic system management improvements, many of which have been implemented in the ensuing years.
- **Moving Transit Forward** - A study conducted by Metro and completed in 2010. This study recommended a Bus Rapid Transit route in the Interstate 44 corridor, with a transit center at the Shrewsbury MetroLink Station, among other improvements.

Additional information regarding these studies may be found in Chapter 1 of this Environmental Impact Statement.

In addition to the above studies, the need for improved north-south connectivity, a full interchange with Interstate 44 in the vicinity of Shrewsbury and other improvements identified by the proposed Build Alternatives are identified in the following Comprehensive Plans:

- **St. Louis County Strategic Plan** is the comprehensive plan for St. Louis County. The transportation component identifies the need for improved connectivity in the central core of the County. It further identifies the need for arterial road improvements that support economic development in inner ring suburbs. The plan was last fully updated in 2008, with progress updates completed in 2010 and 2012.
- **St. Louis County's Transportation Vision for 2030 and Beyond**, last updated in 2011, identifies long-term transportation goals for St. Louis County. This document identifies the need for road improvements that support walkability, livability and sustainability of inner ring suburbs. This document also identifies the desire for multi-modal connectivity that provides transportation choices to citizens of the region.
- **St. Louis County's Strategic Transportation Infrastructure Plan for Renewing the Region and Promoting Sustainable Growth** - This report was first prepared at the request of East-West Gateway in 2007, and last updated in 2011. The Strategic Transportation Infrastructure Plan identified the need for improved north-south connectivity in the central core area of the County, the need for a full interchange at Interstate 44 in the vicinity of Shrewsbury, and the need to provide multi-modal choices for citizens of the County and the region. The Strategic Transportation Infrastructure Plan specifically identifies the proposed South County Connector as a project that would connect the northern, central and southern parts of St. Louis County. It further states that completing this connector would enhance economic development opportunities throughout the corridor, but particularly in the Lemay and

Affton areas of South St. Louis County; as well as for the Carondelet Coke redevelopment area in the city of St. Louis. The Lemay area and the Carondelet Coke redevelopment area have suffered from disinvestment in the past. Finally, the report indicates that the South County Connector would facilitate improved mobility, improved bicycle connectivity, improved pedestrian access at the neighborhood level, improved access to transit and support sustainable development.

- **Regional Transportation Plan 2040** is the long range transportation plan for the St. Louis region. Prepared by the East-West Gateway Council of Governments, the plan was last updated in 2011. The Regional Transportation Plan identifies the need for a full interchange with Interstate 44 in the vicinity of Shrewsbury.

Congestion costs the average motorist in the St. Louis area more than 30 hours of travel time delay per year.<sup>50</sup> Much of the travel delays contribute to lost productivity, particularly during peak hour travel times. Chapter 3 identifies the proposed improvements to Levels of Service for the Build Alternatives. Implementing the South County Connector will result in a savings of time and fuel for travelers utilizing the corridor and roads in the vicinity. The Build Alternatives will facilitate access to the Shrewsbury MetroLink Station, with resultant benefits to commuters. The Build Alternatives will support walk-ability and livability in the Shrewsbury area by reducing traffic on local roads, improving safety, and facilitating the elimination of parking on sidewalks, which currently occurs due in part to sight-distance but primarily due to the high volume of traffic. Both of the Build Alternatives include options for improving access and connectivity for pedestrians and bicyclists. The Build Alternatives will support the need for present and future traffic requirements in the Core Study Area. It will also support improved traffic flow in areas outside of the Core Study Area. As a result, long-term productivity is enhanced by both of the Build Alternatives.

#### 4.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed Build Alternatives for the South County Connector will result in an irreversible and irretrievable commitment of resources. These resources include natural, physical, human and fiscal resources. The No Build Alternative will require a minimal commitment of irreversible and irretrievable commitment of resources.

##### 4.15.1 No Build Alternative

The No Build Alternative will require a commitment of irreversible and irretrievable commitment of resources. Under the No Build Alternative, traffic growth will continue to reduce the Level of Service (LOS) of existing transportation facilities in the area.

The cost and time of associated with a decreasing LOS on the existing facilities under the No Build scenario would result in an irretrievable commitment of resources. It is foreseeable that certain improvements would be necessary for the continued functioning of the system that would also require the irreversible and irretrievable commitment of resources. Most of these will fall in the category of transportation system management elements. Some irreversible and irretrievable commitment of resources would also be required as part of routine operation and maintenance of the existing transportation system.

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<sup>50</sup> 2011 Annual Urban Mobility Report, Texas A&M Transportation Institute.



#### **4.15.2 Build Alternatives**

Both of the Build Alternatives will require the irreversible and irretrievable commitment of resources. These will be similar for both of the Build Alternatives. Implementation of the South County Connector will require a similar commitment of natural, physical, human and fiscal resources.

Land used in the construction the South County Connector will be an irreversible commitment of resources during the time period that the land is used for a transportation facility. If a greater need arises for the use of the land or if the transportation facility is no longer needed, the land can be converted to a different use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Fossil fuels, labor and construction materials such as steel, cement, and aggregate would be required to construct the Build Alternatives. In addition, labor and natural resources are used in fabricating, preparing and transporting construction materials. These are not retrievable, but their use would not have an adverse effect on continued availability.

The commitment of these resources is predicated on the basic concept that transportation systems contribute to the health, safety and welfare of the residents in the immediate vicinity of the project, but also of St. Louis County, the region and the State. Benefits such as improved walkability and livability of neighborhoods, improved access to businesses and community services, increased safety, reduced travel times and increased potential for economic development are expected to outweigh the irreversible and irretrievable commitment of resources used in implementing the South County Connector.

#### **4.16 SECONDARY AND CUMULATIVE IMPACTS**

The Council on Environmental Quality (CEQ) defines cumulative impacts as: the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Direct effects are caused by the project and occur at the same time and place. Indirect (secondary) effects are caused by the specific project and are later in time or further removed. The focus of this section is on the secondary and cumulative impacts.

##### **4.16.1 Secondary Impacts**

Some of the anticipated secondary impacts were identified early in the EIS process, and a decision was made by the County and MoDOT to incorporate and address the impacts as a part of the overall Build Alternatives. One of the key secondary impacts of the project is an expected shift in travel demand and preferred travel routes through the project vicinity. For example, the proposed project is anticipated to shift a considerable amount of traffic from adjacent local and arterial roadways to the new roadway. The southern limit of the proposed South County Connector could terminate directly into River Des Peres Boulevard just south of the Shrewsbury MetroLink Station. However, due to the anticipated increase in traffic levels on River Des Peres Boulevard as a result of the project, this secondary impact was addressed by including proposed interchange improvements at Watson Road, Weil Avenue, and River Des Peres Boulevard. While not specifically required as a part of the South County Connector project, improving the interchange would significantly improve the capacity and reduce delays at this location. These improvements would also facilitate improved access to and from Mackenzie Road, one of the routes for those traveling through the South County area. By providing

improved access to Watson Road and Mackenzie Road, traffic levels on River Des Peres Boulevard, south of the Watson Road interchange, are not projected to substantially increase when compared to the No Build Alternative. Further detailed information regarding the travel demand modeling, projected traffic volumes, and the recommended interchange improvements is included in Appendix C, Alternatives and Traffic Analysis.

During the early agency coordination meetings as a part of the EIS process, the city of St. Louis recommended that the South County Connector study area include the entire River Des Peres Boulevard corridor to Interstate 55 due to the anticipated additional traffic that would be generated. The City indicated that there are existing safety concerns along River Des Peres Boulevard south of Watson Road, including narrow travel lanes, deficient horizontal curves, and poor drainage. To address these concerns, St. Louis County will support the St. Louis Department of Streets in their efforts to secure funding for drainage and safety improvements to River Des Peres Boulevard.

Based on the traffic studies conducted during the EIS process, the level of service was computed at the major intersections along River Des Peres Boulevard for both the Build and No Build scenarios. The only intersection that showed a substantial drop in level of service was at the Watson Road Interchange. Therefore the southern terminus of the South County Connector project was extended to include interchange improvements at Watson Road, Weil Avenue, and River Des Peres Boulevard. Improving the interchange and intersection access at Weil Avenue would significantly improve the capacity and reduce potential delays at this location. These improvements would also facilitate improved access to and from Mackenzie Road, one of the routes for those traveling through the South County area. By providing improved access to Watson Road and Mackenzie Road, traffic levels on River Des Peres Boulevard, south of the Watson Road interchange, are not anticipated to substantially increase when compared to the No Build Alternative.

Safety and drainage improvements may be needed along sections of River Des Peres Boulevard. These improvements to River Des Peres Boulevard have “independent utility,” meaning that the project would be “usable and be a reasonable expenditure even if no additional transportation improvements in the area are made.”<sup>51</sup> Furthermore, the South County Connector, with the southern terminus of the project at the River Des Peres Boulevard and Watson Road interchange, also has independent utility. Although the future safety improvements on River Des Peres Boulevard are not specifically identified as a direct or secondary impact, these improvements are included within the Cumulative Impact analysis as a future foreseeable project as shown in Table 4-21.

Another secondary impact associated with the proposed Build Alternatives is related to the shift in traffic levels away from local roadways within residential neighborhoods in the project study area. This reduction in traffic would improve safety, reduce noise levels, improve air quality, and provide opportunities for pedestrian and bicycle access through less congested neighborhoods. These factors would also enhance community cohesion and improve quality of life in these neighborhoods.

There would also be some secondary impacts associated with the proposed right-of-way acquisitions required for the project Build Alternatives. Relocation of businesses and residences may result in various social and economic impacts, including a change in tax revenues and potential future economic activity for certain communities. However, until the final acquisition

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<sup>51</sup> 23 CFR § 771.111(f)

and relocation plans are completed as required by the Uniform Act, and decisions are made by the businesses and residents regarding where they would relocate, the specific impacts would not be known.

#### **4.16.2 Cumulative Impacts**

For a project to have a cumulative impact, it must have some incremental impact in the category being studied. For example, if the cumulative projects will have impacts on air quality, but the proposed project will not have any incremental impact on air quality, the project has no cumulative impacts on air quality. Conversely, if the project will have a large enough significant impact, such that it may affect an entire watershed or air basin, it may be considered to have significant cumulative impacts even if no other projects will contribute impacts.

For the Build Alternatives, there are certain environmental resources that would have no impacts, or very minimal impacts, to cumulatively add or assess in comparison to the past, the present, or the reasonably foreseeable future. Environmental resources that could have potential cumulative impacts associated with past, present and foreseeable future projects include following specific resource categories, which are analyzed in this section.

- Social and Economic Impacts
- Noise
- Water Resources/Water Quality/Floodplains
- Cultural Resources/Section 4(f) Properties

Cumulative impacts or effects on people and the built environment could include actions by other entities, including municipalities in the project vicinity; other projects conducted by St. Louis County; transportation resource agencies and providers, such as FHWA, MoDOT, Metro, and Great Rivers Greenway District; utility providers, including the Metropolitan St. Louis Sewer District, as well as other private utility companies; and private developers.

A list of some of the past, other present, and foreseeable future projects that have either been completed, are underway, or are being planned by these agencies is included Table 4-21. These would be development projects that are independent of the proposed action, which means that they could be completed regardless of whether a South County Connector is implemented.

**Table 4-21: Past, Present and Reasonably Foreseeable Projects**

<b>Project Description</b>	<b>Estimated Timeframe</b>
<b>Past Projects</b>	
I-64 Reconstruction Project	Completed
Pedestrian Bridge over River des Peres	Completed
Bridge Widening on River Des Peres Boulevard	Completed
<b>Present/Ongoing Projects</b>	
Sunnen Redevelopment Plan	2012-2013
Deer Creek Center Redevelopment	2012-2013
<b>Reasonably Foreseeable Projects</b>	
Hanley Road Improvements from Manchester to Flora Ave.	TBD
Bus Rapid Transit (Locations throughout region)	TBD
GRG Trail Improvements - River Des Peres Greenway - Gravois to Lansdowne	2013-2014
MoDOT Replacement of I-44 Bridge over BNSF Railroad	2013-2015
Deer Creek Sanitary Relief and Infiltration and Inflow Reduction Project (Watershed Improvements)	2013-2020
Watson Road/Chippewa and River Des Peres Blvd. Intesection Improvements	2015-2020
Manchester Road Widening (Brendell Ave to MetroLink)	2014
Shrewsbury Avenue & Lansdowne Avenue Resurfacing	2014
GRG Trail Improvements - River Des Peres Greenway - Lansdowne to Francis Slay Park	TBD
GRG Trail Improvements - Deer Creek Greenway	TBD
GRG Trail Improvements - Bike St. Louis Plan Improvements	TBD
Rehabilitation of River Des Peres Boulevard	TBD
River des Peres Combined Sewer Overflow (CSO) Tunnel	2033

Source: CMT analysis of various resource documents, 2012.

#### **4.16.2.1 Social and Economic Impacts**

The South County Connector project is being developed within a built environment where urban land uses, including residential, commercial and industrial areas were being developed since the late 1800s and early 1900s. Since much of the project area is already surrounded by intensive transportation, residential, commercial, and industrial uses; future development would likely consist of redevelopment and rehabilitation projects, or infill development in residential and commercial areas. Until specific project plans are known, it is not possible to quantify the specific cumulative effects on private redevelopment projects.

The proposed action is the construction of a new roadway and interchange to improve connectivity, capacity and safety in the project area. There is much research and empirical evidence to support the theory that economic development would follow significant improvements in transportation and access. Most of the identified cumulative projects in the project area include other roadway improvement projects and trail improvements, which will enhance accessibility. Either of the Build Alternatives, coupled with past, present and reasonably foreseeable projects, are expected to result in greater increases in jobs (short-term construction jobs), as well as increased economic productivity and improved access to jobs. No significant adverse cumulative effects are anticipated.

#### 4.16.2.2 Noise

A cumulative noise impact occurs when an increase or decrease in noise levels from the proposed project is added to noise level changes from previous projects in the area and/or future projects that are likely to occur. Because noise effects are localized based on the surrounding activities, the South County Connector project does not contribute to the cumulative noise effects outside of the area impacted by the Build Alternatives. However, since the Build Alternatives affects traffic levels beyond the limits of the revised corridors, the original Core Study Area was used as the geographic limits of the cumulative effects analysis for noise.

Noise in the corridor has increased over time with the construction of Interstate 44 and increase in traffic over time. In addition to highway noise, the operation of the MetroLink light rail system, as well as existing railroads and industrial land uses in the project area contribute to the overall noise levels in the area.

The Build Alternatives result in no substantial increase in noise levels at any of the measured receptors; although several receptors would experience noise levels that approach or exceed the FHWA's Noise Abatement Criteria as presented in Section 4.4. While there are some noise impacts identified as a result of the Build Alternatives, there are also several residential neighborhoods that would experience a decrease in noise levels as a result of the anticipated substantial shift in traffic away from the residential areas to the new roadway.

No other past, present, or foreseeable future projects in the project area are anticipated to result in cumulatively significant impact on noise levels.

#### 4.16.2.3 Water Resources/Water Quality/Floodplains

The South County Connector project would require constructing new highway segments across portions of Deer Creek within the Deer Creek Watershed, a sub-watershed of the River des Peres Watershed. The Deer Creek Watershed Alliance (Alliance), in partnership with Metropolitan St. Louis Sewer District (MSD), EWGCOG, GRG, MDOC, and other local agencies, municipalities and non-profit organizations, was formed to approach the problems of the Deer Creek Watershed. The Alliance released the *Deer Creek Watershed Plan*<sup>52</sup> in 2011.

Deer Creek and River des Peres exist within a highly urbanized environment and both waterways have been significantly altered from pre-settlement conditions. The waterways have been channelized and are connected to the Combined Sewer Overflows (CSOs) of MSD.

MSD is responsible for the interception, collection, and treatment of wastewater for approximately 1.4 million residents of St. Louis City and County. MSD also provides stormwater management in this area. "Most of MSD's customers are served by separate sanitary and storm sewers. However, approximately 75 square miles of St. Louis City and adjoining St. Louis County are served by a combined sewer system..." "During dry weather, the capacity of the combined sewer system is sufficient so that wastewater is conveyed to MSD's wastewater treatment plants. During heavy rainfall, the combination of stormwater and wastewater may exceed the capacity of the combined sewer system. The excess flow, called combined sewer overflow (CSO), is discharged directly to the Mississippi River or to one of the river's tributary streams through permitted outfall pipes."<sup>53</sup>

<sup>52</sup> <http://deercreekalliance.org/plan.aspx>

<sup>53</sup> Combined Sewer Overflow Long-Term Control Plan Update Report, Metropolitan St. Louis Sewer District, August 2009.

MSD is currently in the planning process to undertake water quality improvement projects in the region. Within the project vicinity, these projects include the Deer Creek Sanitary Relief Project and the River des Peres CSO Tunnel project. The Deer Creek Sanitary Relief project includes various improvements to reduce inflow and infiltration of sanitary sewer overflows into the Deer Creek Watershed.

Within the River des Peres watershed, adjacent to the South County Connector project, MSD is proposing to eliminate CSO outfalls by sewer separation and constructing a tunnel to convey all flows from the remaining CSOs to a single location on the River des Peres main channel in the vicinity of its confluence with Deer Creek. Another deep tunnel underneath the River des Peres would be constructed to control CSO outfalls to the Lower and Middle River des Peres, a portion of which is directly adjacent to the South County Connector project area. These tunnels would store the excess wet weather overflows for eventual treatment at the waste water treatment facilities instead of allowing direct discharges into the rivers and streams. These projects will significantly improve water quality within the water resources in the region.

While the primary purpose of MSD's CSO projects is to minimize the impacts of CSOs on water quality, aquatic biota, and human health within the region, it is likely there would also be some floodplain reduction benefits through excess storage capacity during wet weather conditions.

Either of the proposed Build Alternatives for the South County Connector would be designed and constructed with appropriate mitigation measures to protect water quality and floodplain impacts. With the best management practices and mitigation measures identified in this EIS, measures incorporated in the Deer Creek Watershed Plan, and the ongoing projects by MSD; water quality and floodplain impacts associated with the water resources in the region would be improved. No significant adverse cumulative effects are anticipated.

#### **4.16.2.4 Cultural Resources/Section 4(f) Properties**

Private development projects (specifically infill and urban redevelopment) that demolish or alter properties can contribute to the loss of historic resources. The project area has likely lost historic structures and sites to development, redevelopment, and transportation projects. There are no properties currently listed on the National Register of Historic Places (NRHP) within the original Core Study Area. However, as part of the EIS process, cultural resource surveys were completed within the Area of Potential Effect (APE), which identified 13 historic resources that are eligible for inclusion in the NRHP as discussed in Section 4.9. Of these 13 eligible properties, four properties would be affected by the Build Alternatives.

Mitigation includes a combination of field documentation and historic archival research for the historic resources. The appropriate measures will be determined through consultation among the SHPO, FHWA, and the County to mitigate the impacts to the historic resources. Procedures for determining the level of documentation necessary for each resource are included in the draft Memorandum of Agreement (MOA), which is included in Appendix H. The executed MOA will be included in the Final Section 4(f) Evaluation.

Since no properties are identified on the NRHP within the limits of the cumulative projects identified in this Section, no additional impacts are anticipated to historic resources beyond those surveyed as a part of the South County Connector project. Since the River des Peres Channel was determined eligible for listing on the NRHP, MSD's CSO projects may result in impacts to this property, which would require further coordination between MSD and the SHPO.

There are two parks and two trails that will be affected by the Build Alternatives, but no impacts to their facilities are anticipated. It is expected that these parks could actually be enhanced through mitigation measures as part of the proposed project, including construction of park access and vehicular parking, as well as transfer of excess property to the parks that could result in a net benefit to the parks. A separate Section 4(f) Evaluation is included in Appendix H. No other Section 4(f) impacts are anticipated as a result of the cumulative projects.



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## **Chapter 5**

# **Comments and Coordination**

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### **5.0 GENERAL**

Public engagement and agency coordination have been a key element in the development of the South County Connector Environmental Impact Statement (EIS). In an effort to meet the project's purpose and need, address public concerns, and identify an alternative that would benefit stakeholders, the project team designed and implemented a comprehensive public engagement program. Through this program, the study team: 1) connected with the project's interested and impacted parties; 2) facilitated a proactive process that was open and responsive to community stakeholders; and 3) provided multiple opportunities for agency coordination and public input. This chapter summarizes the activities and methods of the integrated public engagement and agency coordination program.

### **5.1 COORDINATION PLAN**

The Federal Highway Administration (FHWA) is the lead federal agency for the study. The Missouri Department of Transportation (MoDOT) and St. Louis County serve as joint lead agencies. According to Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), lead agencies are required to establish a plan for coordinating public and agency participation and comments during the EIS process. In compliance with this requirement, the study's sponsors and their consultant team developed an extensive coordination plan that identified key stakeholders, outlined multiple opportunities for early and ongoing public involvement, defined the methods for informing the public and soliciting input, and established a strategy for agency coordination. The study's coordination plan remained flexible throughout the process to ensure that the study team was responsive to stakeholder interests, needs and participation requests.

### **5.2 AGENCY COORDINATION**

In accordance with the National Environmental Policy Act (NEPA) and FHWA guidelines, the project team sought cooperation and collaboration with federal, state, and local agencies known as cooperating and participating agencies. These agencies were invited to do the following:

- Review and comment on study findings and documents;
- Provide input on key study components such as the purpose and need statement and the range of alternatives; and
- Identify possible issues and impacts concerning the project and its proposed alternatives.

A cooperating agency is any agency, other than the lead, that has jurisdiction by law or expertise with respect to the project's environmental evaluation. The Federal Highway Administration's NEPA regulations (23 CFR 771.111(d)) require that federal agencies with jurisdiction by law, such as permitting or land transfer authorities, be invited to serve as cooperating agencies for an EIS. In compliance with this requirement, a letter of invitation was submitted to the St. Louis District of the U.S. Army Corps of Engineers (USACE) on November 4, 2010. In response, the USACE – St. Louis agreed to be a cooperating agency.

In compliance with SAFETEA-LU, the project team also identified and initiated engagement with participating agencies, which are federal and non-federal governmental agencies that may have an interest in the project because of their jurisdictional authority, special expertise, and/or statewide interest. The participating agencies are formally invited to be involved in the review of the EIS. According to the provisions of the environmental review process outlined in SAFETEA-LU's Section 139, cooperating agencies are, by definition, also participating agencies, thus use of the term "participating agency" for the remainder of this chapter will refer to both cooperating and participating agencies. Federal, state, and local agencies were invited by letter (November 4, 2010) to be participating agencies for the South County Connector EIS. The Table 5-1 lists the project's lead, cooperating, and participating agencies.

**Table 5-1: Coordinating Agencies**

<b>Agency</b>	<b>Agency Role</b>
Federal Highway Administration	Lead
Missouri Department of Transportation	Joint Lead
St. Louis County	Joint Lead
US Army Corps of Engineers, St. Louis District	Cooperating
US Environmental Protection Agency	Participating
Federal Emergency Management Agency	Participating
US Fish and Wildlife Service	Participating
U.S. Department of Housing and Urban Development	Participating
Missouri Department of Natural Resources	Participating
East-West Gateway Council of Governments	Participating
Metro	Participating
Great Rivers Greenway District	Participating
Trailnet	Participating
City of St. Louis	Participating
City of Maplewood	Participating
City of Shrewsbury	Participating
City of Webster Groves	Participating

For this project, the responsibilities of the cooperating agency included, but were not limited to:

- Communicating the agency's views on subjects within its jurisdiction or expertise;
- Participating in the NEPA process as early as practicable, including commenting on the purpose and need and range of alternatives;
- Identifying at the earliest possible time any issues regarding the project's potential environmental, historic preservation, or socioeconomic impacts that could substantially delay or prevent the granting of a permit or other approval;
- Reviewing and commenting on preliminary versions of the Draft EIS and Final EIS; and;
- Informing the County, FHWA and/or MoDOT if at any point in the process the agency's needs were not being met.

The participating agencies' roles and responsibilities for this project included but were not limited to:

- Providing meaningful and early input in the NEPA process, especially on defining the purpose and need, determining the range of alternatives to be considered, and the methodologies and level of detail required in the alternatives analysis;
- Participating in coordination meetings and joint field reviews as appropriate;
- Identifying, as early as practicable, any issues of concern regarding the project's potential environmental impacts and offering meaningful and timely input on unresolved issues; and
- Providing timely feedback and comments that reflected the views and concerns of the agency on the adequacy of the document, alternatives considered, and the anticipated impacts and mitigation.

The study team established key collaboration points so that the participating and cooperating agencies would have well-defined opportunities for meaningful participation in the decision-making process. These key collaboration points helped to set a deadline for agency input so that the study could move forward in a timely manner. At the conclusion of a collaboration point, the lead agencies made the necessary decisions, based on both agency and public input, in order to advance the study.

Key collaboration points occurred at the following major milestones of the study:

- Purpose and Need/Initial Range of Alternatives;
- Alternatives to be evaluated in the Draft EIS/Methodologies for evaluating impacts; and
- Preliminary Draft EIS (environmental regulatory agencies).

For each collaboration point, agencies were given 30 days, from receipt of the information and/or documents, to review and provide written responses. The lead agencies were not required to revisit project decisions associated with specific collaboration points once the review period ended and the project had moved on to the next collaboration point.

### **5.2.1 Agency Scoping Meeting**

The scoping meeting for participating agencies was held on December 10, 2010 to determine the range of actions, alternatives, and impacts to be examined in the EIS. Participating agencies were asked to identify any significant environmental or community issues that the study team needed to consider or address in the EIS.

All agencies identified as participating agencies were invited to the scoping meeting; the following participated:

- East-West Gateway Council of Government
- Great Rivers Greenway District
- Metro
- Missouri Department of Natural Resources
- City of Webster Groves

The scoping meeting provided an opportunity to discuss the following topics raised by participating agencies:

- Purpose and need
- Project objectives
- Public involvement
- Accommodation of bicycle and pedestrian facilities
- Land use changes surrounding a new transportation facility
- Consideration of plans for a southern MetroLink extension (Metro South)
- Coordination with the city of St. Louis and departments within St. Louis County (e.g. Parks)
- Incorporation of “green” elements, in particular storm water management controls
- Consideration for and cooperation with bus transportation
- Ability of a new transportation facility to reduce traffic on local arterials

Participating agencies were invited to submit formal comments to be included in the scoping by January 8, 2011. Written comments received and the scoping meeting minutes are available in Appendix B.

### **5.2.2 Participating Agency Meetings**

Table 5-2 contains dates and descriptions of occasions on which the study team engaged the participating agencies:

**Table 5-2: Participating Agency Meetings**

<b>Meeting Description and Purpose</b>	<b>Date</b>
<b>City of St. Louis Department of Streets:</b> Met with Director and key staff to discuss the project, purpose and need and potential for River Des Peres Blvd. as a logical connecting point. Discussed condition of River Des Peres Blvd.	11/15/2010
<b>City of Shrewsbury:</b> Early coordination meeting and interview to introduce the project and identify issues to be addressed in the EIS.	11/18/2010
<b>Metro:</b> St. Louis County met with Metro representatives to brief them on the project and discuss agency coordination.	11/22/2010
<b>Agency Scoping Meeting:</b> An agency scoping meeting was held on December 10, 2010. Eight (8) representatives from five (5) participating agencies were in attendance. The purpose of the scoping was to introduce the project and obtain agency input on the key issues to be addressed in the EIS.	12/10/2010
<b>City of Webster Groves:</b> Early coordination meeting and interview to introduce the project and identify issues to be addressed in the EIS.	12/20/2010
<b>City of Maplewood:</b> Early coordination meeting and interview to introduce the project and identify issues to be addressed in the EIS.	1/10/2011
<b>City of Shrewsbury:</b> A meeting was held with the City of Shrewsbury to introduce the study and get input on the project scope.	1/24/2011
<b>Missouri Department of Transportation and Missouri State Historic Preservation Office (SHPO):</b> The project team met with MoDOT and SHPO to discuss Section 106 Cultural Resources.	2/24/2011
<b>St. Louis County Department of Parks and Recreation:</b> A meeting was held to discuss potential historic resources in the project area.	2/24/2011
<b>Trailnet:</b> The project team held a briefing with Trailnet to introduce the study and collect input on the project scope and discuss opportunities for bicycle and pedestrian improvements..	3/31/2011
<b>City of St. Louis Board of Public Service:</b> Gave presentation to the City of St. Louis Board of Public Service (BPS) to update them on the South County Connector and answer any questions. Designated John Kohler P.E., as point of contact for the BPS.	5/3/2011
<b>Preliminary Alternatives Charrette with Transportation Providers:</b> A charrette was held with participating agencies whose area of expertise related to transportation planning. The goal was to collaborate on refining preliminary conceptual alternatives. Representatives from the following agencies participated: East West Gateway Council of Governments, Metro, MoDOT, City of St. Louis – Streets Department, St. Louis County Department of Highways and Traffic, Great Rivers Greenway, and Trailnet.	5/5/2011
<b>St. Louis County Board of Highways and Traffic:</b> Presentation County's Board of Highways and Traffic, representing constituents, updating them on the South County Connector.	5/9/2011
<b>Public Officials Briefing:</b> Project update and presentation given to elected officials prior to the alternatives open house meetings.	6/1/2011

**Table 5-2: Participating Agency Meetings (cont.)**

<b>Meeting Description and Purpose</b>	<b>Date</b>
<b>Collaboration Meeting #1/#2 (combined) – Purpose and Need/Initial Range of Alternatives and Alternatives Retained for Detailed Analysis:</b> The study team presented draft versions of the Purpose and Need chapter of the EIS; the initial range of alternatives; primary and secondary screening results of the preliminary alternatives; and a recommended alternative corridor to be carried forward into detailed analysis. Participating agencies were given 30 days from receipt of the information to review and provide responses.	8/24/2011
<b>Federal Emergency Management Agency (FEMA):</b> The study team met with FEMA to discuss floodplains/floodways.	9/1/2011
<b>East-West Gateway Council of Governments:</b> Presentation to the Transportation Planning Committee on the Connector, community outreach and potential affects. Answered questions from Trailnet, Great Rivers Greenway, the St. Louis County Municipal League, the City of St. Louis, Metro, MoDOT and East-West Gateway staff.	10/12/2011
<b>St. Louis County Board of Highways and Traffic:</b> Presentation to County's Board of Highways and Traffic, representing constituents, updating them on the South County Connector.	11/14/2011
<b>City of Maplewood - TIF (Tax Increment Financing) Commission Meeting:</b> Discussed redevelopment considerations for the Deer Creek Center, potential for flooding, and the relationship to the Connector.	12/8/2011
<b>Metro:</b> Met at Metro offices to discuss build alternatives and the impact on the Shrewsbury MetroLink Station. Access to the station was discussed, potential for bus rapid transit, improved ridership with a full interchange between the Connector and I-44. Options for replacing lost parking were discussed.	12/9/2011
<b>City of St. Louis Department of Streets and Department of Parks, Recreation and Forestry:</b> Project update meeting.	12/21/2011
<b>City of Maplewood:</b> Met to discuss floodplain issues, desire for a full interchange and type of intersections with local roads.	1/4/2012
<b>Trailnet and Great Rivers Greenway:</b> Project meeting to discuss bicycle and pedestrian access, impacts to existing trails and green design issues.	1/19/2012
<b>City of Shrewsbury:</b> Project update with Mayor and other city officials.	1/24/2012
<b>Missouri Department of Transportation:</b> Briefing with Area Engineers for City of St. Louis and South St. Louis County, and with transportation planning staff.	1/25/2012
<b>City of Webster Groves:</b> Project update with Mayor and other city officials.	2/1/2012
<b>Missouri Department of Transportation and Missouri State Historic Preservation Office (SHPO):</b> The project team conducted a site visit with MoDOT and SHPO to view potential historic resources in the project area.	2/8/2012
<b>Missouri Department of Transportation St. Louis District:</b> Meeting with District Engineer Ed Hassinger, Deputy District Engineer, Head of Planning and other District officials to update MoDOT on the status of the Connector, public outreach and stakeholder meetings.	3/21/2012
<b>Trailnet Charrette:</b> Although this event was not initiated by the project team, St. Louis County, MoDOT, and their consultant team provided information for and participated in the charrette. As a participating agency, Trailnet had been involved with the development of the EIS and alternatives since early in the study process. Trailnet hosted the charrette to gain input from key stakeholders and other participating agencies on specific design elements for the River Des Peres Boulevard alternative.	3/27/2012



**Table 5-2: Participating Agency Meetings (cont.)**

<b>Meeting Description and Purpose</b>	<b>Date</b>
<b>Trailnet:</b> Meeting at St. Louis County offices with Ann Mack to discuss the results of the Trailnet sponsored charette, and bicycle/pedestrian connectivity options for the Connector and vicinity.	3/27/2012
<b>Trailnet:</b> Meeting at St. Louis County offices with Ann Mack and other Trailnet representatives for continued discussions on bicycle/pedestrian connectivity.	4/18/2012
<b>Trailnet:</b> Follow-up briefing with Ann Mack and other Trailnet representatives to discuss bicycle/pedestrian connectivity relative to the South County Connector	5/3/2012
<b>City of St. Louis Board of Public Service:</b> Met with representatives of the St. Louis Board of Public Service (BPS) to discuss concerns about potential traffic impacts to sections of River Des Peres Blvd. and Carondelet Blvd.	5/10/2012
<b>Participating Agency Meeting:</b> Meeting to update the participating agencies on the status of the project and review alternatives being carried forward in the EIS and next steps.	6/4/2012
<b>City of Maplewood:</b> Meeting with Mayor, City Administrator and City Engineer to discuss flooding of existing roadways in the vicinity and intersection options for the South County Connector with major arterial roads. City expressed desire for a full interchange between the Connector and I-44.	6/7/2012
<b>Metro:</b> Project update meeting with Chief of Planning and System Development and other staff.	6/7/2012
<b>Great Rivers Greenway:</b> Meeting with representatives of the Great Rivers Greenway District to discuss connectivity of the River Des Peres Greenway Trail and the Deer Creek Trail to other trails in the area. Also discussed traffic consideration, timing for project construction and context sensitive design considerations.	6/14/2012
<b>Trailnet:</b> Meeting to discuss concepts for a walkable, bikeable Shrewsbury.	7/6/2012
<b>Trailnet:</b> Meeting at St. Louis County offices with representatives from Trailnet and John Norquist, CEO of the Congress for New Urbanism to discuss context sensitive design and complete streets concepts for the South County Connector	11/29/2012
<b>Congress for New Urbanism (Sponsored by Trailnet):</b> Public forum on context sensitive design issues focusing on the South County Connector at Washington University. County staff in attendance to answer questions if needed.	11/29/2012
<b>City of Maplewood:</b> Met to discuss Section 4(f) and potential for impacts to Deer Creek Park and Deer Creek Trail.	12/6/2012
<b>Shrewsbury Parks Department:</b> Met to discuss Section 4(f) and potential impacts to Ackfeld Park and the Shrewsbury Family Aquatic Center in Shrewsbury	12/7/2012
<b>City of St. Louis Department of Parks, Recreation and Forestry:</b> Met to discuss Section 4(f) and potential impacts to River Des Peres Park.	12/7/2012
<b>St. Louis County Parks and Recreation Department:</b> Met to discuss Section 4(f) and potential impacts to Deer Creek Park	12/7/2012
<b>Great Rivers Greenway:</b> Met to discuss Section 4(f) and potential impacts to Deer Creek Trail and River Des Peres Greenway Trail.	12/20/2012
<b>City of Shrewsbury:</b> Met with Mayor, Public Works Director and the City Administrator to discuss potential impacts to the Public Works facilities. Noise and visual impacts were discussed, and desire for a Design Advisory Committee to look at potential enhancements and how to fund them.	1/7/2013

In addition to these participating agency meetings, there were numerous internal meetings among the lead and joint lead agencies, as well as those with the consultant team.

### 5.2.3 Agency Correspondence

Participating agencies were given the opportunity to review study documents and offer comments related to the South County Connector process. The study team asked that the agencies formally submit comments and documentation as written correspondence. Table 5-3 lists the correspondence received over the course of the study. Appendix B contains copies of this correspondence.

**Table 5-3: Agency Correspondence**

<b>Agency/Organization</b>	<b>Date of Correspondence</b>	<b>Summary of Comments</b>
U.S. Fish and Wildlife Service	4/8/2011	Review of proposed action and statement of ne impact on federal T&E species, and negligle impact on wetlands, and other wildlife resources.
City of Shrewsbury	7/7/2011	Feedback on the corridor alternatives presented at the public meetings
U.S. Dept. of Housing and Urban Development-St. Louis Office	9/2/2011	Receipt of materials acknowledged, no comments
City of St. Louis	9/6/2011	Concern about the termination point of the River Des Peres corridor alternative and the impacts to River Des Peres Blvd. Recommendation that the corridor include
City of Webster Groves	9/8/2011	Comments on Purpose and Need
Trailnet	9/11/2011	Comments on Purpose and Need
Great Rivers Greenway District	9/12/2011	Comments on Purpose and Need
City of Webster Groves	9/15/2011	Response to the Recommendation of Alternatives to be Carried Forward into
City of Webster Groves	9/15/2011	Comments on EIS Impact Assessment Methodologies
Metro	9/16/2011	Comments on Purpose and Need
City of Maplewood	9/23/2011	Response to the Recommendation of Alternatives to be Carried Forward into
Great Rivers Greenway District	9/26/2011	Response to the Recommendation of Alternatives to be Carried Forward into Detailed Analysis
Trailnet	9/26/2011	Comments on EIS Impact Assessment Methodologies
Missouri Department of Conservation	11/3/2011	Heritage Review Report
U.S. Army Corps of Engineers	2/6/2012	Preliminary wetland jurisdictional determination letter
Great Rivers Greenway District	2/21/2012	Letter requesting project information
Great Rivers Greenway District	5/31/2012	Letter requesting project information
Trailnet	7/2/2012	Letter with recommended language for the Draft EIS
State Historic Preservation Office	9/26/2012	Review and concurrence of project report for cultural resources pursuant to Section 106 of the National Historic Preservation Act.

### 5.3 TRIBAL CONSULTATION

The FHWA has a government-to-government relationship with Indian Tribes.<sup>54</sup> This special relationship is affirmed in treaties, Supreme Court decisions, and Executive Orders, and provides that FHWA and other Federal agencies consult with Tribes regarding policy and regulatory matters. Section 106 of the National Historic Preservation Act (NHPA) also requires that FHWA consult with Tribes for undertakings that may affect properties considered to have traditional religious and cultural significance.

There were 17 Indian Tribes contacted by the FHWA as part of the agency scoping process early in the study. The Osage Nation and the Miami Tribe of Oklahoma provided letters of response requesting review of the Phase I cultural resources survey and further coordination if potential sites of tribal significance are identified as a part of the project. Copies of the letters received from the Osage Nation (12/14/10) and Miami Tribe of Oklahoma letter (2/28/11) are included in Appendix B.

### 5.4 PUBLIC OUTREACH AND ENGAGEMENT

In recognizing the value of informing the public, building support, and creating an open and accessible public involvement program, the South County Connector's lead agencies and project team developed a comprehensive plan for public engagement. The public engagement activities that occurred throughout the development of the EIS demonstrated a commitment to a decision-making process that balanced engineering and transportation needs with social, economic, and natural environmental factors.

The project team provided early and ongoing opportunities for stakeholders to learn about and understand the project; voice their concerns; identify issues and impacts; recommend alternatives or alternative modifications; and suggest mitigation strategies. Using a variety of indirect and direct engagement strategies, the project team was able to promote an open exchange of information and ideas between the public and project decision makers. Direct strategies, such as public meetings and presentations, utilized personal interactions to educate and engage stakeholders. Indirect strategies employed communications channels like web sites, newsletters, and traditional media. The following section describes how the project team informed, educated, and engaged stakeholders and the general public.

#### 5.4.1 Identifying and Informing Stakeholders

From the onset of the South County Connector EIS, the project team sought to coordinate with key stakeholders – any person or group that had an interest in or could be potentially impacted by the outcome of the project. The study team initially identified 34 stakeholders, including elected officials and leaders of local municipalities, community organizations, school districts, business organizations, and neighborhood groups. These stakeholders were sent letters, or emails, that introduced the project and provided contact information for project representatives. In order to maximize outreach, the study team asked stakeholders to inform their constituents, residents, and members about the project and to share project contact information, such as the website and email address.

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<sup>54</sup> The National Historic Preservation Agency defines "Indian Tribe" as "an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians" (16 U.S.C. 470w).

Table 5-4 lists initial public officials and stakeholders who received introductory information packets. A sample copy of the project introduction letter and the information packet that was distributed to stakeholders are in Appendix B.

Since the initiation of the South County Connector EIS process in 2010, several of these public officials are no longer in office as noted in the table. Due to redistricting, the study area also now has two U.S. Representatives - William Lacy Clay, Jr. (District 1) and Ann Wagner (District 2) and new State Representatives. Other local officials in the project area have also changed since the EIS process was initiated as highlighted and noted in the table. After the November 2012 election, contacts have been made with many of the newly elected officials. As the EIS process progresses, coordination of project activities will continue with the newly elected or appointed officials, as appropriate.

In addition to the stakeholders identified in Table 5-4, additional groups were notified of the South County Project, including parochial schools, places of worship, and subdivision and homeowners associations throughout the surrounding project area of influence.

#### **5.4.2 Stakeholder Coordination**

The study team sought stakeholders' input to learn about community issues that could impact the EIS and to gain insights on effective public outreach and engagement activities. To this end, the team conducted nine interviews with 14 municipal, business and community stakeholders in the first eight weeks of the project. These meetings introduced stakeholders to the project, obtained their initial thoughts on the study, and helped the team become aware of key issues, opportunities, and the best methods to engage stakeholders' constituents. After the initial stakeholder interviews, the project team conducted stakeholder meetings throughout the study to present project information, obtain information and input, or provide a status update. Table 5-5 lists these stakeholder coordination meetings.

**Table 5-4: Public Officials and Key Stakeholders**

<b>Elected Office/Stakeholder Organization</b>	<b>Contact Person(s)</b>	<b>Title</b>
United States Senate	Roy Blunt	U.S. Senator
United States Senate	Claire McCaskill	U.S. Senator
United States Congress, 3 <sup>rd</sup> District of Missouri	Russ Carnahan James P. McHugh	U.S. Congressman
Missouri State Senate – District #1	Jim Lembke	State Senator
Missouri State Senate – District #4	Joe Keaveny	State Senator
Missouri State Senate – District #15	Eric Schmitt	State Senator
Missouri State Senate – District #24	John Lamping	State Senator
Missouri House of Representatives – District #63	Tishaura Jones	State Representative
Missouri House of Representatives – District #73	Stacey Newman	State Representative
Missouri House of Representatives – District #87	John Diehl	State Representative
Missouri House of Representatives – District #91	Jeanne Kirkton	State Representative
City of Brentwood	Chris Seemayer	City Administrator
City of Maplewood	Marty Corcoran James White	City Manager Mayor
City of Shrewsbury	Felicity Buckley	Mayor
City of Webster Groves	Gerry Welch	Mayor
City of Richmond Heights	Amy Hamilton	City Manager
City of Saint Louis – Office of the Mayor	Stephen Gregali	Special Assistant to the Mayor
City of Saint Louis – Ward 11	Matt Villa	Alderman
City of Saint Louis – Ward 12	Fred Heitert	Alderman
City of Saint Louis – Ward 13	Fred Wessels, Jr.	Alderman
City of Saint Louis – Ward 16	Donna Baringer	Alderwoman
City of Saint Louis – Ward 18	Terry Kennedy	Alderman
City of Saint Louis – Ward 23	Joe Vaccaro	Alderman
City of Saint Louis – Ward 24	William Waterhouse	Alderman
Afton Chamber of Commerce	Joan Edleson	Executive Director
Brentwood Chamber of Commerce	Michael Darning	
Maplewood Chamber of Commerce & Community Betterment Foundation	Jeannine Beck	Executive Director
City of Webster Groves/Old Webster Groves Business District	Roger Grow	Director of Planning and Development
Richmond Heights Chamber of Commerce	Virginia Pennington	Executive Director
Webster Groves-Shrewsbury Area Chamber of Commerce	Diane Lamboley	Executive Director
South County Chamber of Commerce	Donna Abernathy-Schumann	Executive Director
Afton School District	Ken Weissflug	Superintendent
Green Center/River Des Peres Watershed Coalition	Theodore Smith	Staff Member
Webster Park Neighborhood Association	Margaret Sowash	President

Note: The above highlighted officials were serving various constituencies in the project area at the time the South County Connector EIS process was initiated in 2010, but are no longer in office,

**Table 5-5: Stakeholder Coordination**

<b>Stakeholder Organization</b>	<b>Purpose</b>	<b>Date</b>
Webster Groves/Shrewsbury Area Chamber of Commerce	Project stakeholder interview and introduction of the project	11/11/2010
Maplewood Chamber of Commerce and Community Betterment Foundation	Project stakeholder interview and introduction of the project	11/15/2010
City of St. Louis – Board of Aldermen (Alderpersons Arnowitz, Baringer, Vaccaro, and Villa)	Project stakeholder interview and introduction of the project	11/19/2010
Afton Chamber of Commerce	Project stakeholder interview and introduction of the project	12/3/2010
Webster Park Neighborhood Association	Project stakeholder interview and introduction of the project	12/7/2010
Afton School District	Project stakeholder interview and introduction of the project	12/7/2010
Ameren	Introduce the project and obtain information on Ameren facilities in the project area	12/7/2010
St. Louis County Council – District 6 (Councilman Steve Stenger)	Introduced the project	12/15/2010
Congressman Russ Carnahan’s St. Louis Office – U.S. House of Representatives, 3 <sup>rd</sup> District of Missouri	Introduced the project	12/15/2010
Metropolitan St. Louis Sewer District	Introduced the project and obtain information on MSD facilities in the project area	12/20/2010
Laclede Gas	Introduced the project and obtain information on Laclede Gas facilities in the project area	3/21/2011
Metropolitan St. Louis Sewer District	Discussed plans for a tunnel in the study area	4/7/2011
Mississippi River Transmission	Coordinated on the MRT gas facilities in the project area	9/21/2011
City of St. Louis – Board of Aldermen (Alderpersons Arnowitz, Baringer, Vaccaro, and Villa) and Stephen Gregali (Special Assistant to the Mayor)	Presented a project update	9/27/2011
St. Louis County Council – District 5 and 6 (Councilmen Pat Dolan and Steve Stenger)	Presented a project update	10/11/2011
Ameren Missouri	Discussed Ameren facilities within the study area	11/2/2011
St. Louis County Council – District 5 and 6 (Councilmen Pat Dolan and Steve Stenger)	Presented a project update	5/1/2012

### 5.4.3 Public Meetings

The study team used public meetings as a tool for direct engagement and face-to-face interaction. These meetings provided the optimal opportunity for educating the public on the EIS process, and helping stakeholders understand and appreciate the complexity of the decision-

making process. They also were an excellent occasion to solicit and collect public input on the project and its purpose and need, possible impacts, and potential solutions or alternatives. In the public involvement plan, the project team identified three types of public meetings:

- *Public Scoping* – to be held early in the process to identify issues related to the project's purpose and the development of preliminary alternatives
- *Public Meetings* – to present the preliminary alternatives for public input
- *Public Hearing* – to be held during the review period of the Draft EIS and in compliance with NEPA requirements

#### **5.4.3.1 Public Scoping**

A public scoping meeting was held early in the project as a part of the EIS process. This meeting was a means for determining the range of issues to be addressed in the project and for identifying significant issues related to the proposed action. It provided an opportunity for the public to give its input on the issues and factors being considered in the environmental evaluation and helped to determine the purpose and need for the project and the alternatives being evaluated.

The South County Connector public scoping meeting took place on December 9, 2010, from 3:00 – 7:00 P.M. at the Affton White-Rodgers Community Center. The meeting was conducted in an open house format, so there was no formal presentation. Approximately 340 citizens attended the public scoping, where they learned about the project and EIS process, met the study team, and provided input. Representatives from St. Louis County, MoDOT and the County's consultant team staffed display boards, answered questions about the project, and encouraged attendees to complete a comment form. The comment form asked citizens to provide input on the purpose and goals of the project, possible benefits of the connector, factors the study team should consider throughout the study, and concerns about the project. Some respondents suggested routes and alignments for the connector.

There were several types of communication tools used to inform the public of the scoping process, including the following:

- Newspaper notices;
- The first project newsletter (distributed to more than 400 residents, businesses, churches, civic organizations and community leaders);
- Ten portable electronic message boards stationed throughout the project corridor;
- A notice posted on the project website;
- Flyers distributed via email and at preceding stakeholder meetings/community presentations;
- Media coverage; and
- Meeting announcements posted on, or circulated by, stakeholders' websites, e-mail broadcasts, electronic notifications and bulletins, and social media.

Immediately following the meeting, exhibits and documents from the scoping meeting were posted on the study website, along with the comment form. Interested parties and stakeholders had until January 8, 2011 to submit their comments for inclusion in the scoping summary.



A total of 119 comment forms, 17 maps, and 13 comments were received via e-mail or through the study website during the scoping period. The majority of respondents identified themselves as residents and represented communities and municipalities within and around the study area, including Shrewsbury, the city of St. Louis, Webster Groves, Affton, Maplewood and Unincorporated St. Louis County.

When asked to rank the study's goals, respondents indicated that the following two goals were most important: improving connectivity between south St. Louis County, city of St. Louis, and central St. Louis County; and improving traffic safety throughout the corridor.

Other goals that were suggested included:

- Enhancing safety and access for pedestrians and bicyclists;
- Improving access to MetroLink;
- Reducing local traffic; and
- Preserving environmental resources.

The public was also given the chance to identify factors the study team should consider in the development of the EIS and preliminary alternatives. The top category of responses was social impacts – most specifically, residential and community impacts. Comments in this section demonstrated support for neighborhood preservation and transportation alternatives that would have minimal impacts on residential relocations, property values, and community character.

Respondents also listed factors related to the natural environment such as floodplain and storm water management, impacts on green spaces – namely Rives Des Peres and Deer Creek - and historic structures. Other considerations identified by respondents were: traffic flow and safety; pedestrian and bicyclists accommodations; previous transportation plans; land use; landscape and beautification; utility relocation; and multi-modal options.

When asked to identify any concerns they may have about the project, those most often cited were the following:

- Loss of homes;
- Residential displacements;
- Decrease in neighborhood and property values; and
- Community division.

Other concerns included the following:

- Noise pollution from vehicle traffic;
- Loss of green space and parkland;
- Traffic congestion management and possible increased traffic through neighborhoods;
- Potential impacts to River des Peres and its parkland;
- Insufficient need for a new transportation facility;
- Project costs; and

- Coordination with the city of St. Louis.

Appendix B contains the public scoping summary report.

#### **5.4.3.2 Preliminary Alternatives Public Meetings**

The study team used input from the public scoping to further refine the project's purpose and need and to help develop preliminary corridor alternatives that were presented for comment at two public meetings held on June 7, 2011 and June 9, 2011. These interactive sessions gave interested citizens and stakeholders the opportunity to examine detailed project information and to share their corridor preferences and concerns. More than 500 area citizens attended the two public meetings to view the five alternative corridors presented by the study team: Laclede Station Road, Shrewsbury Avenue, River Des Peres Boulevard, Local Roads, and South Outer Road.

Display stations, manned by study team members, showed a map of each proposed corridor together with its pros and cons. Other stations featured information about the study's history, purpose and need, environmental considerations, and the EIS process and timeline. Attendees were given the opportunity to complete comment forms, including specific written comments on the back of each alternative map they received as handouts. For those unable to attend an open house, the displays were made available on the study's website. Citizens had until July 8, 2011 to submit their comments regarding the preliminary alternatives.

The study team received approximately 500 comment forms, including alternative maps, from meeting attendees. Additional input in the form of emails, letters, and phone calls were also received.

Most respondents indicated that they favored the River Des Peres Boulevard corridor over the other potential alternatives for addressing connectivity, congestion, and safety in the study area. According to the comment form results, none of the other corridor alternatives received more than 10% of support as the first choice. Respondents considered the following top four factors in making their selections:

- Fewer residential impacts;
- Minimal community impacts;
- Capacity to reduce congestion; and
- Ability to improve connectivity.

Respondents also expressed concerns over possible negative impacts to residential properties and community character, and the possibility of increasing traffic through municipal neighborhoods.

A summary report of the public meetings, and the input received, was made public via the study's website and is located in Appendix B.

#### **5.4.4 Community Presentations**

Additionally, study team members made presentations about the project at community meetings hosted by municipalities, neighborhood associations, chambers of commerce, and professional organizations. By going into the community to share information, answer questions and obtain

feedback, the team was able to gain exposure to a wider audience of constituents than those who would normally attend study meetings. Table 5-6 documents the community presentations.

**Table 5-6: Community Presentations**

<b>Community Presentation</b>	<b>Approximate Attendance</b>	<b>Date</b>
<b>Holly Hills Neighborhood Association</b> (City of St. Louis) – community meeting	19	11/22/2010
<b>Maplewood Chamber of Commerce</b> – member luncheon	60	1/25/2011
<b>South County Chamber of Commerce</b> – member luncheon	100	1/27/2011
<b>Transportation Engineers Association of Metro St. Louis</b>	60	4/19/2011
<b>Mid-County Realtors:</b> Presentation to discuss schedule, potential alignments and right-of-way concerns.	40	6/15/2011
<b>City of Webster Groves</b> – community meeting	100	6/29/2011
<b>Parkway Gardens Neighborhood Association</b> (City of St. Louis) – community meeting	10	7/26/2011
<b>St. Louis Hills Neighborhood Association</b> – block captains meeting (City of St. Louis)	25	11/14/2011
<b>Lindenwood Park Neighborhood Association</b> - community	50	9/10/2012

Additionally, the study team hosted a briefing for key stakeholders and elected officials on June 1, 2011. The purpose of this meeting was to present the preliminary alternatives to community and municipal leaders, most of which are also serving as participating agencies, in advance of presenting them to the general public. Attendees were invited to ask questions and provide comments. The briefing was attended by representatives, or their designees, from the following offices or organizations:

- Missouri Department of Transportation
- St. Louis County Executive
- St. Louis County Council
- St. Louis County Board of Highways and Traffic
- St. Louis County Parks and Recreation
- City of Maplewood
- City of Shrewsbury
- City of St. Louis Streets & Highway Department

There were few comments or questions at the meeting. One stakeholder asked about the information being presented at the public meetings; another asked if cost estimates had been determined yet. Meeting notes from the briefing are included in Appendix B.

#### **5.4.5 Other Tools For Informing and Engaging the Public**

A variety of means were used to inform, educate, and involve stakeholders in the study process, including a project website, email broadcasts and newsletters. Stakeholder groups also represented a critical channel for distributing information to the general public. Municipalities,

neighborhood groups, chambers of commerce and civic organizations posted meeting notices on their websites, distributed emails to their members, and included project information in their newsletters. Finally, media outlets ran stories throughout the project and helped to disseminate project information to a broad audience.

Equally important were the ways in which stakeholders could share their thoughts, ideas, and concerns with the study team. To this end, the direct phone number of the project manager was published, and an email account, website feedback form, and mailing address were set up to receive written correspondence. The following sections present the other types of stakeholder outreach conducted during the South County Connector EIS process.

#### **5.4.5.1 St. Louis County Stakeholder Outreach and Coordination**

As a part of the South County Connector project, St. Louis County representatives conducted significant outreach activities. Subdivision trustees within the South County Connector area of influence were sent letters informing them of the project, including information related to the purpose and need, logical points of connections and potential areas of concern. More than 80 subdivision trustees, heads of neighborhood associations and related individuals were contacted regarding the project.

In addition, project information and updates were provided to the City of St. Louis Aldermen from the Wards representing residents along the River Des Peres corridor, both in the immediate study area and the area of influence of the project. This information was in turn distributed to neighborhood association leaders, Ward Chairmen and other leaders within the Ward, along with an offer to meet with those leaders and the citizens they represent.

More than 30 school principals, pastors and other congregational leaders of churches and other places of worship were contacted regarding the project. This included an offer for face to face meetings and presentations if desired.

Project updates and related information were periodically provided to the St. Louis County Department of Highways and Traffic South Area Engineer; the St. Louis County Department of Planning South Area Planner and the St. Louis County Economic Council South Sector Specialist. These individuals are responsible for meeting with community leaders in the South County Area. Project updates were provided to them for the purposes of informing their constituencies of activities related to the South County Connector. Information was provided for use in e-newsletters, and other publications of various constituencies in the South County area.

St. Louis County provided e-mail updates to local elected officials, state representatives and to stakeholder organizations for use and distribution of information about the project. These contacts exceeded more than 75,000 individuals.

Project updates were also provided to citizens via St. Louis County publications, including the St. Louis County "Direct"; the "Affton Networking Newsletter" and other newsletters. Direct is an on-line publication with an e-mail distribution of more than 100,000 individuals. In addition, in July 2011, copies of the Direct publication were distributed via mail to more than 100,000 individuals, which included information about the South County Connector project.

The St. Louis County Neighborhood Preservation Services group conducts Neighborhood Walks in unincorporated areas of St. Louis County. Representatives from County departments participate in the Neighborhood Walks, to canvas the residents about concerns and provide information. Three Neighborhood Walks have occurred in neighborhoods bordering the River

Des Peres corridor in 2011 and 2012. These Neighborhood Walks occurred within the area of influence of the South County Connector. One walk included canvassing the neighborhood immediately south of the Core Study Area of the project, bordered by Watson Road, Mackenzie Road and River Des Peres Boulevard. Each household was mailed a postcard notifying them of the walk. Prior to the walk, participants from County departments were provided updates on the South County Connector. The St. Louis County Project Manager for the South County Connector participated directly in the Neighborhood Walks. During the walk, citizens were given the opportunity to discuss the project or were provided contact information for the project. More than 1,100 households were contacted.

The St. Louis County Project Manager for the South County Connector attended and participated in meetings for the Mid-Metro 5 Community Planning Area (CPA) of the St. Louis Regional Sustainability Plan being developed by the East-West Gateway Council of Governments, St. Louis County and 10 other regional partners. The Mid-Metro 5 CPA consists of the communities of Clayton, Richmond Heights, Brentwood, Maplewood and Shrewsbury. The South County Connector would traverse parts of Maplewood and Shrewsbury, and would affect travel patterns in the other communities. The Project Manager answered questions and provided input to the planning process relative to the Connector.

The East-West Gateway Council of Governments and Metro are conducting a transit oriented development (TOD) study for all 37 stations of the MetroLink light rail transit system. Conceptual TOD plans are being developed for five specific stations, including the Sunnen and Maplewood MetroLink Station. The Sunnen Station is within the project study area, and the Maplewood Station is immediately north. The St. Louis County Project Manager for the South County Connector is participating in this process to discuss how the South County Connector can provide improved access to transit, opportunities for bus rapid transit and the potential for TOD. The South County Connector passes through part of the parking lot for the Shrewsbury MetroLink Station, the next station south of the Sunnen Station. Public meetings of related projects such as those for the Mid-Metro 5 CPA and the MetroLink TOD study provided the opportunity to reach a broader audience relative to the South County Connector.

#### **5.4.5.2 Website**

A comprehensive project website was established to provide information on every aspect of the study, including: a project overview; an explanation of the EIS process; public meeting notices; displays and handouts from public meetings; summaries of public input from meetings; technical documents; contact information; and project updates. The website also featured a feedback form that allowed visitors to submit questions and comments. The comments were automatically forwarded to the study team, logged, and responded to when warranted. The project website has had more than 17,000 visits since it was launched in the fall of 2010.

#### **5.4.5.3 Newsletters**

Study newsletters were another means of communicating with the public. Three full-color newsletters were written, designed and distributed. The first newsletter served as an introduction to the study and advertised the first open house (scoping) meeting. The second newsletter reported on public input results from the first open house and announced the preliminary alternatives open house meetings. The third newsletter shared the public's response to the preliminary alternatives and provided the rationale on which alternatives would be carried forward for detailed analysis. Newsletters included maps, photos, and graphics to help better inform readers. They also included study contact information.

Newsletters were printed and distributed via U.S. mail service and email broadcasts. They were also posted on the study's website. Additionally, the study team distributed them at stakeholder meetings and community presentations.

Over the course of the study, the newsletter mailing list grew to include more than 650 contacts. Copies of the three newsletters are included in Appendix B.

#### **5.4.5.4 Email and Written Correspondence**

A project email account was established to facilitate direct and convenient communication with the study team. Messages sent to this account were automatically forwarded to members of the study team. Team members would review the inquiry or comment, respond when necessary, and record the messages in a log. Additionally, the project manager from St. Louis County made his email address public and stakeholders were able to contact the sponsoring agency directly. Though the nature of the email messages varied, most could be organized into the following categories:

- Concerns about negative impacts from a new roadway;
- Questions about project goals, the process, and/or alternatives;
- Suggestions for connectivity, routes, and transportation options; and
- Comments on the project in general, the study team, and transportation planning.

The study team could also be reached via mail. Three letters from members of the general public were received, all of which were in response to the preliminary alternatives presented for public input at two meetings in June of 2011.

#### **5.4.5.5 Phone Calls**

Study contact information included the direct telephone number of the Project Manager at St. Louis County so that citizens could contact the project manager with their questions, comments, or presentation requests.

#### **5.4.5.6 Social Media**

The project team used the social media tool Facebook and Twitter to augment online engagement. A government organization Facebook page was set up to engage audiences and disseminate information. Notices about the website launch date and the open houses were posted on the page. The study team received one inquiry and comment via its Facebook page and a total of 30 "Likes" (i.e. subscribers).

#### **5.4.5.7 Media**

Local television and radio stations, newspapers, and online media reported on general study information, public meetings, and the public's response to the project. Media coverage helped to convey information and generate interest in the South County Connector. Table 5-7 displays the media coverage that has taken place.

**Table 5-7: Media Coverage**

<b>Media Source/Publication</b>	<b>News Story Title</b>	<b>Date Published or Aired</b>
<i>Suburban Journals</i> / www.stltoday.com	County To Hold Meeting On South County Connector Road	12/6/2010
KTVI and KPLR – www.Fox2now.com and www.kplr.com	South County Connector Open House	12/7/2010
KTVI – Fox 2 News and www.Fox2now.com	New Push For Cross County Connector Road	12/8/2010
KSDK 5 – www.ksdk.com/TV report	St. Louisans Could Soon See A “South County Connector”	12/9/2010
<i>St. Louis Post Dispatch</i> / www.stltoday.com	Connector Road Draws Comments	12/10/2010
<i>St. Louis Business Journal</i>	St. Louis May Add South County Connector	12/10/2010
<i>Webster-Kirkwood Times</i>	Hanley Road Heading South?	12/17/2010
St. Louis Public Radio	Linking South St. Louis County And Clayton	12/21/2010
<i>St. Louis Post Dispatch</i>	Linking South County, Clayton Studied	12/21/2010
<i>Suburban Journals</i> /www.STLtoday.com	Meetings Scheduled To Discuss South County Connector Road Project	6/1/2011
<i>Webster-Kirkwood Times</i> Online	Public Hearing For South County Connector Study	6/3/2011
<i>Kirkwood-Webster Groves Patch</i>	South County Connector Meetings Will Unveil New Road Plans	6/7/2011
CBS St. Louis /KMOX News Radio 1120	South County Connector Topic At Meeting Tonight	6/7/2011
KSDK.com (News Channel 5)	MoDOT's South County Connector Routes	6/7/2011
CBS St. Louis KMOX News Radio 1120	Residents Peek At Proposed “South County Connector” Routes	6/8/2011
<i>Webster-Kirkwood Times</i>	Citizens View Options For North-South Connector Roads	6/10/2011
<i>Kirkwood-Webster Grove Patch</i>	South County Connector Draws Concerns	6/10/2011
<i>Aftton-Shrewsbury Patch</i>	South County Connector Unveils Potential Worries For Shrewsbury	6/10/2011
<i>St. Louis Post Dispatch</i> /Stltoday.com	Connector Road Project Discussed	6/11/2011
KMOX News Radio 1120	Connecting Clayton To South County (The Mark Reardon Show)	6/14/2011
KMOV News Channel 4	Proposed Connector Route In St. Louis County Raises Concerns For Residents	6/14/2011
<i>South County Times</i>	Concerns Coming In On North/South Road Proposals	6/17/2011



**Table 5-7: Media Coverage (cont.)**

<b>Media Source/Publication</b>	<b>News Story Title</b>	<b>Date Published or Aired</b>
<i>Webster-Kirkwood Times</i>	Concerns Coming In On North/South Road Proposals	6/17/2011
KPLR 11 TV News and www.Fox2now.com	South County Connector Project Could Replace In Webster Groves Homes	6/29/2011
<i>Kirkwood Patch</i>	County to Talk South Connector in Webster Groves	6/29/2011
KTVI – Fox 2 News	Webster Groves Residents Oppose Road Project	6/30/2011
<i>Kirkwood-Webster Groves Patch</i>	Webster Groves Portion of South County Connector Sparks Opposition	6/30/2011
KTVI – Fox 2 News and www.Fox2now.com	Webster Groves Residents Oppose Road Project	6/30/2011
<i>Kirkwood-Webster Groves Patch</i>	Resolution In Works To Oppose North-South Connector	7/6/2011
<i>Afton Networking Newsletter</i>	Project Update	7/8/2011
<i>Kirkwood Patch</i>	County Connector Resolution Defends Homes	7/20/2011
<i>Webster-Kirkwood Times</i>	Council Opposed Connector Routes That Take Residences	7/22/2011
<i>Afton-Shrewsbury Patch</i>	Shrewsbury Takes Stand Against South County	8/10/2011
<i>Webster-Kirkwood Times</i>	Residents Have Say On Connector Proposals	8/12/2011
<i>Maplewood-Brentwood Patch</i>	South County Connector Draws More Opposition	8/12/2011
KMOV – News Channel 4	Plans Announced For South County Traffic Connector	11/3/2011
<i>Webster-Kirkwood Times</i>	Plan Chosen For New North-South Connector Road	11/4/2011
<i>South County Times</i>	Plan Chosen For New North-South Connector Road	11/4/2011
<i>St. Louis Post Dispatch/</i> www.Stltoday.com	Officials Zero In On Route For South County Connector/Local News Digest	11/4/2011
<i>Metro St. Louis Suburban Journals</i>	River Des Peres Boulevard Chosen As South Connector	11/7/2011
<i>Webster-Kirkwood Times</i>	Letters To The Editor – South County Connector: A Result of NIMBY	11/23/2011
<i>Webster-Kirkwood Times</i>	New Urbanism Expert Weighs in on South County Connector Plan	12/7/2012
<i>South County Times</i>	New Urbanism Expert Weighs in on South County Connector Plan	12/7/2012
<i>Mehlville-Oakville Patch</i>	South County Connector Study Draft Due This Month	1/3/2013

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## **Chapter 6**

# **Reference Documentation**

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### **6.0 GENERAL**

This chapter consists of the following sections:

- 6.1 Environmental Laws and Regulations
- 6.2 Reference Documents
- 6.3 List of Preparers
- 6.4 List of Recipients

### **6.1 ENVIRONMENTAL LAWS AND REGULATIONS**

#### **6.1.1 Federal Statutes**

- Alaska Native Claims Settlement Act, 43 U.S.C. §1602
- Americans with Disabilities Act, 42 U.S.C.
- Civil Rights Act of 1964, 42 U.S.C. §2000d et seq.
- Clean Air Act of 1970, 42 U.S.C. §7401
- Clean Water Act of 1972, 33 U.S.C. §1251 et seq.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, 42 U.S.C. §103
- Department of Transportation Act of 1966, 49 U.S.C. §303
- Endangered Species Act of 1973, 16 U.S.C. §1531
- Federal Water Pollution Control Act of 1972
- Land and Water Conservation Fund (LWCF) Act of 1964
- National Environmental Policy Act of 1969, 42 U.S.C. §4321
- National Historic Preservation Act of 1966, Section 106, 16 U.S.C. §470
- Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6901
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), 23 U.S.C. §101
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

#### **6.1.2 Federal Regulations**

- 23 CFR 650A, Location and Hydraulic Design of Encroachments on Flood Plains
- 23 CFR 652, Pedestrian And Bicycle Accommodations And Projects
- 23 CFR 771, Environmental Impact And Related Procedures
- 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise
- 36 CFR 60, National Register of Historic Places
- 36 CFR 800, Protection of Historic Properties
- 40 CFR 93, Determining Conformity Of Federal Actions To State Or Federal Implementation Plans
- 40 CFR 1508, Terminology And Index

**6.1.3 Executive Orders**

- Executive Order 11988 – Floodplain Management
- Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

**6.1.4 Federal Agency Orders**

- DOT Order 5610.2, Environmental Justice in Minority Populations and Low-Income Populations
- DOT Order 5650.2 – Floodplain Management and Protection
- DOT Order 5680.1 - Final Order To Address Environmental Justice in Minority Populations and Low-Income Populations
- DOT Order 6510.2 – Environmental Justice
- DOT Order 6640.23 - FHWA Actions To Address Environmental Justice In Minority Populations And Low-Income Populations

**6.1.5 Federal Agency Guidance Documents**

- Council on Environmental Quality (CEQ) Environmental Justice: Guidance Under the National Environmental Policy Act
- FHWA Guidance on Environmental Justice and NEPA
- FHWA Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents

**6.1.6 State of Missouri Statutes**

- Missouri State Regulations 3 CSR 10-4.111 Wildlife Code: General Provisions, Endangered Species
- Missouri State Regulations 10 CSR 10-5.480 St. Louis Area Transportation Conformity Requirements
- Missouri State Regulations 10 CSR 10-6.010 Ambient Air Quality Standards
- Missouri State Regulations 10 CSR 20-7 Water Quality

**6.2 REFERENCE DOCUMENTS****6.2.1 Chapter 1, Introduction and Project History**

- Sverdrup Civil, Inc., Cross-County Corridor Major Transportation Investment Analysis, 1998.
- Parsons Brinckerhoff Quade & Douglas, Inc., St. Louis County Arterial Study (South Study Area), 2005.
- Parsons Brinckerhoff Quade & Douglas, Inc., Shrewsbury Planning Study, 2004.
- Parsons Brinckerhoff Quade & Douglas, Inc., Hanley Road Corridor Study, 2004.
- Federal Transit Administration (FTA), EWGCOG, Metro, and MoDOT, St. Louis Metro South MetroLink Extension DEIS, 2005.
- Metro, Moving Transit Forward: St. Louis Regional Long-Range Transit Plan Executive Summary, 2010.

**6.2.2 Chapter 2, Purpose and Need**

- AASHTO, Geometric Design of Highways and Streets, 2004.
- Summary of Automatic Traffic Volume Counts, St. Louis County Department of Highways and Traffic, Revised 12/31/2007.
- Missouri Department of Transportation, District 6 Traffic Volume and Commercial Vehicle Count Map, 2010.
- St. Louis County Arterial Study – Existing and Future Conditions, Parsons Brinckerhoff Quade & Douglas, Inc., April 30, 2003.
- Transportation Research Board, Highway Capacity Manual 2010, Chapters 18 & 19, 2010.
- Florida DOT Quality of Service Handbook, Page 15, 2009.
- MoDOT Engineering Policy Guide, Section 232.
- Transportation Research Board, Highway Capacity Manual 2010, Chapters 18 & 19, 2010.
- AASHTO, Geometric Design of Highways and Streets, 2004, Exhibit 2-32.
- Missouri Department of Transportation, Engineering Policy Guide, Section 232.
- Interstate 44 Record Drawings, MoDOT.
- AASHTO, Geometric Design of Highways and Streets, 2004.
- Gateway Bike Plan, Great Rivers Greenway, August 2011, <http://www.grgstl.org/projects/gateway-bike-plan-.aspx>.

**6.2.3 Chapter 3, Alternatives**

- A Policy on Geometric Design of Highways and Streets, AASHTO, 2004.
- MoDOT Engineering Policy Guide.
- St. Louis County Standard Specifications for Highway Construction.
- St. Louis County Standard Drawings.
- Roadside Design Guide, AASHTO, 4<sup>th</sup> Edition, 2011.
- FHWA's Travel Model Improvement Program, Volpe National Transportation Systems Center, USDOT, April 27, 2009.  
[http://media.tmiportal.org/clearinghouse/tmip/peer\\_review/evaluation/evaluation.pdf](http://media.tmiportal.org/clearinghouse/tmip/peer_review/evaluation/evaluation.pdf).
- St. Louis County Design Criteria for the Preparation of Improvement Plans, [http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Design\\_Criteria/sec50\\_40.pdf](http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Design_Criteria/sec50_40.pdf).
- St. Louis County Access Management Guidelines, St. Louis County, June 2008.  
[http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Publications/access\\_management\\_guidelines\\_06-2008.pdf](http://www.stlouisco.com/Portals/8/docs/Document%20Library/highways/Publications/access_management_guidelines_06-2008.pdf)
- AASHTO: A Policy on Geometric Design of Highways and Streets, 2011.

**6.2.4 Chapter 4, Affected Environment and Environmental Consequences**

- Strategic Land Use Plan Map of the St. Louis Comprehensive Plan, 2005.
- U.S. Census Bureau Data 2010.
- U.S. Census Bureau,  
<http://www.Census.gov/hhes/www/poverty/data/incpovhlth/2010/tables.html>.
- U.S. Census Bureau, 2006-2010 American Community Survey Estimate
- Realtor.com search conducted August 1, 2012.

- 2010 ADA Standard for Accessible Design, U. S. Department of Justice, September 15, 2010
- Community Cohesion As A Transport Planning Objective, Victoria Transport Policy Institute; February 22, 2012.
- <http://www.ewgateway.org/rpsd/>
- Metro South Study - Alternative Analysis and Draft EIS, U.S. DOT – Federal Transit Administration and East-West Gateway Council of Governments, 2005.
- Moving Transit Forward - St. Louis Regional Long-Range Transit Plan, Metro, 2010.
- Gateway Bike Plan, Great Rivers Greenway, August 2011.
- Missouri 10 CSR 10-6.010 Ambient Air Quality Standards; July 31, 2011;  
<http://www.dnr.mo.gov/env/esp/aqm/standard.htm>
- MNDR; Environmental Services Program, Arnold West; 2012,  
<http://www.dnr.mo.gov/env/esp/aqm/arnold.htm>.
- Regional Transportation Plan 2040 (RTP 2040), East-West Gateway Council of Governments (EWGCOG), June 29, 2011.
- Air Quality Conformity Determination and Documentation (8-Hour Ozone and PM2.5) for the Regional Transportation Plan 2040 and the 2012-2015 Transportation Improvement Program (FY 2012-2015 TIP), June 2011.
- A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, FHWA
- MoDOT Policy Statement on Highway Noise Abatement, effective July 13, 2011,  
[http://epg.modot.org/index.php?title=127.13\\_Noise](http://epg.modot.org/index.php?title=127.13_Noise).
- FHWA-HEP-10-025, FHWA Highway Traffic Noise: Analysis and Abatement Guidance, December 2011.
- MoDOT Engineering Policy Guide, Section 127.13 Noise, July 13, 2011.  
[http://epg.modot.org/index.php?title=127.13\\_Noise](http://epg.modot.org/index.php?title=127.13_Noise).
- MoDOT Engineering Policy Guide, 127.13.7 Analysis of Noise Abatement Measures; October 18, 2011.
- Missouri Department of Natural Resources Website:  
<http://dnr.mo.gov/env/wpp/waterquality/305b/>.
- Missouri Department of Natural Resources Website:  
<http://dnr.mo.gov/env/wpp/waterquality/303d.htm>.
- FEMA FIRM St. Louis County, Missouri, Panel 302 of 420; Map Number 29189C0302 H, August 2, 1995.
- FEMA FIRM City of St. Louis, Missouri, Panels 77 and 79 of 125; Map Numbers 2903850077C and 2903850079C, respectively, May 24, 2011; FEMA FIRM St. Louis County, Missouri and Incorporated Areas, Panel 304 of 420; Map Number 29189C0304 H, August 2, 1995.
- Deer Creek Watershed Plan. Deer Creek Watershed Alliance, 2011.  
<http://deercreekalliance.org/plan.aspx>.
- Deer Creek Shopping Center Redevelopment Proposal, Summit Development Group; August 30, 2011.
- USFWS Online Database, <http://www.fws.gov/midwest/endangered/lists/missouri-cty.html>, accessed February 2012.
- <http://www.fws.gov/midwest/endangered/lists/missouri-cty.html>.
- Section 4(f) Policy Paper, FHWA, July 20, 2012.
- 2011 Annual Urban Mobility Report, Texas A&M Transportation Institute.

- St. Louis County Strategic Plan, St. Louis County, 2012.
- St. Louis County's Transportation Vision for 2030 and Beyond, St. Louis County, 2011.
- St. Louis County's Strategic Transportation Infrastructure Plan for Renewing the Region and Promoting Sustainable Growth, East-West Gateway Council of Governments, 2011.
- Regional Transportation Plan 2040, East-West Gateway Council of Governments, 2011.
- Deer Creek Watershed Plan, Deer Creek Watershed Alliance, 2011,  
<http://deercreekalliance.org/plan.aspx>.
- Combined Sewer Overflow Long-Term Control Plan Update Report, Metropolitan St. Louis Sewer District, August 2009.



### 6.3 LIST OF PREPARERS

Table 6-1 provides the list of individuals and agencies responsible for preparation of this EIS.

**Table 6-1: List of Preparers**

Preparer	Title	Education/ Registration	Years of Exp.	EIS Responsibility
<b>Federal Highway Administration (FHWA)</b>				
Peggy Casey (retired)	Program Development Team Leader	BS-Civil Engineering	37	Reviewer
Brian Nevins	Environmental Specialist	BS- Mechanical Engineering	5	Reviewer
<b>Missouri Department of Transportation (MoDOT)</b>				
Matt Burcham	Sr. Environmental Specialist	BS Agriculture	20	Project Team Member and document reviewer
Karen Daniels	Sr. Historic Preservation Specialist	BS Historic Preservation/ MHP Heritage Preservation	23	Review of cultural resources sections
Chris Shulse	Sr. Environmental	PhD Biological	1	Reviewer - Biological Resources,
<b>St. Louis County</b>				
John Hicks	Transportation Development Analyst	AICP, Professional Transportation Planner	30	Project Manager, St. Louis County
Adam Spector	Transportation Modeler	P.E.	17	Assistant Project Manager
Sheryl L. Hodges	Director, Dept. of Highways & Traffic	D.E., P.E., L.P.G.		Director, Dept. of Highways & Traffic and Public Works, Public Outreach
Stephnie Leon- Streeter	Deputy Director	P.E.		Core Team Member, Reviewer, Public Outreach
Michael A. Bardot	Division Manager, Highways Planning	P.E.		Division Manager, Core Team Member, Reviewer, Public Outreach
Glenn Henninger	Supervisor, Transportation Planning	P.E.		Core Team Member, Reviewer, Public Outreach
Meiwu An	Transportation Modeler			Core Team Member, Reviewer, Public Outreach
Tobi Moriarty	South Area Engineer	P.E.		Core Team Member, Reviewer, Public Outreach
Dan Naunheim	Division Manager, Highway Design	P.E.		Core Team Member
Ted Medler	Manager	P.E.		Core Team Member, Reviewer, Public Outreach
Joe Kulesa	Supervisor	P.E.		Core Team Member, Reviewer, Public Outreach
Pam Thebeau	Supervisor	P.E.		Core Team Member, Reviewer, Public Outreach
Vinnie Sanvi	Project Engineer	P.E.		Utility and Railroad Coordination
Matt Gruendler	Division Manager, Construction	P.E.		Core Team Member
David Wrone	Public Information Manager			Core Team Member, Public Information

**Table 6-1: List of Preparers (cont.)**

<b>Preparer</b>	<b>Title</b>	<b>Education/ Registration</b>	<b>Years of Exp.</b>	<b>EIS Responsibility</b>
<b>Crawford, Murphy, and Tilly, Inc. (CMT) - Prime Consultant</b>				
Laura Sakach	Project Engineer	BS Civil Engineering/ P.E., AICP	23	Project Manager, Primary Author, Purpose & Need, Alternatives, Environmental Assessment Tasks (Section 4(f) & Cumulative Impacts), Public and Agency Coordination
Brian Eads	Project Engineer	MS Civil Engineering/ P.E., PTOE	13	Location Study, Traffic Studies, Purpose & Need, Alternatives, Cost Estimates, Public and Agency Coordination
Ryan Johnson	Technician	AS Mechanical Technology	20	GIS/AutoCAD Technician: Exhibit Preparation
Dan Meckes	Principal/President	BS Civil Engineering/ P.E.	30	Public and Agency Coordination
Boyd Nowicki	Senior Technician	AS Building Construction	20	GIS Analyst: Exhibit Preparation
Andrew Schlichting	Senior Engineer	BS Civil Engineering/ P.E., PTOE	8	Executive Summary, Purpose & Need, Alternatives, Environmental Assessment Tasks (Social Impacts), Traffic Studies, Location Study
Lana Sumner	Senior Planner	BS Aeronautics- Aeronautical Administration/AICP	21	Reference Documentation, Document Preparation, QA/QC
<b>Vector Communications - Sub-Consultant</b>				
Rebecca Bennett	Senior Consultant	Master of Public Policy	14	Public and Stakeholder Involvement, Comments and Coordination
Laurna Godwin	Partner/Principal	MS Journalism	30	Public and Stakeholder Involvement
Atia Thurmann	Consultant	Master of Social Work	10	Public and Stakeholder Involvement, Comments and Coordination

**Table 6-1: List of Preparers (cont.)**

<b>Preparer</b>	<b>Title</b>	<b>Education/ Registration</b>	<b>Years of Exp.</b>	<b>EIS Responsibility</b>
<b>Burns &amp; McDonnell - Sub-Consultant</b>				
Shari Cannon-Mackey	Senior Environmental Scientist	MLA/BLA Landscape Architecture, BS Fisheries and Wildlife Biology/ CEP pending	22	Environmental Assessment Tasks (Noise, Cultural, Hazardous Materials, Floodplains); Public and Agency Coordination
Greg Knauer	Senior Project Manager	MS Zoology & Aquatic Ecology, BA Zoology	35	QA/QC (Noise, Cultural, Hazardous Materials, Floodplains), Public and Agency Coordination
Jeff Mues	Department Manager	BS Civil Engineering/ P.E.	14	Structures, Hydrology, and Floodplains
Mike Herleth	Associate Civil Engineer	BS Civil Engineering/ P.E.	23	QA/QC (Structures, Hydrology, and Floodplains)
Kevin Heffern	Senior Structural Engineer	BS Civil Engineering/ P.E., S.E.	11	Structures
Sarah Sizemore	Senior Environmental Engineer	MS Environmental Engineering, BS Chemical Engineering/P.E.	14	Hazardous Materials Assessment
Greg Gorman	Project Manager	MS Environmental Health Engineering, BS Chemical Engineering/P.E.	25	Hazardous Materials Assessment
Gary Schnell	Senior Geologist	BS Geology/R.G.	17	Hazardous Materials Assessment
Susan Houghton	Cultural Resource Specialist	MA Anthropology, BA Home Economics/Sociology/Anthropology/RPA	15	Archaeological Resources
Cydney Millstein (Architectural and Historical Research, LLC; sub to BMcD)	Architectural Historian	MA/BA Art History	38	Historic and Architectural Resources
Mary Hauner-Davis	Department Manager	MS Environmental Engineering, BA	15	Air Quality Analysis
Chris Howell	Senior Air Permitting Specialist	BS Mechanical Engineering	13	Traffic Noise Analysis
Tess Fuller	Assistant Environmental Engineer	BS Chemical Engineering	3	Traffic Noise Analysis
Chad Ronchetti	Assistant Environmental Specialist	BS Environmental Geography	1	GIS/AutoCAD Technician: Exhibit Preparation

**Table 6-1: List of Preparers (cont.)**

<b>Kaskaskia Engineering Group (KEG) - Sub-Consultant</b>				
Geri Boyer	Principal	BS Civil Engineering MA/P.E.	29	Funding Strategies
Bryan Cross	Environmental Scientist	BS Environmental Biology	14	Wetlands, Biological Resources, Water Resources
Chad Jennison	Environmental Scientist	BS Ecology	5	Wetlands, Biological Resources, Water Resources
Igor Krinitskiy	Staff Engineer	MS Civil Engineering /P.E.	3	Geotechnical
Allen Minks	Senior Geotechnical Engineer	MS Civil Engineering/P.E.	28	Geotechnical
<b>PGAV Urban Consulting - Sub-Consultant</b>				
Terry Beiter	Senior Project Manager	MS City & Regional Planning	42	Land Use and Economic Impacts
John Brancaglione	Vice President	BA Industrial Design & Urban Design	45	Land Use, Economic and Visual Impacts
Mike Cunnings	GIS/CADD Manager & Project Planner	AB Architectural Technology/ESRI GIS Certified, GIS I and II	10	Land Use Data Collection and Mapping
Scott Runde	Project Planner/Landscape Architect	MS Landscape Architecture, BS Plant Sciences (Landscape Horticulture)	5	Visual Impacts
<b>O.R. Colan - Sub-Consultant</b>				
Daryl Knobbe	Task Manager	BJ Journalism/MO Real Estate Broker Associate	28	ROW Cost Estimating
Leslie Metts	Sr. Agent	MO Real Estate Broker-Salesperson	11	ROW Cost Estimating
Bill Waggoner	Sr. Agent	Bachelor of Journalism/MO Real Estate Broker- Salesperson	13	ROW Cost Estimating
<b>RGL Utility Consulting - Sub-Consultant</b>				
Ron Leible	President	BS Civil Engineering/ P.E.	25	Utility Coordination

## **6.4 LIST OF RECIPIENTS**

The following lists indicate the agencies to which the Draft EIS will be sent for review. Additionally, the list indicates libraries that will receive the Draft EIS to be made available for public viewing.

### **6.4.1 Federal Agencies**

Federal Emergency Management Agency  
Federal Highway Administration  
Federal Transit Administration  
U.S. Army Corps of Engineers, St. Louis District  
U.S. Department of Housing and Urban Development  
U.S. Department of Interior  
U.S. Environmental Protection Agency  
U.S. Fish and Wildlife Service

### **6.4.2 State Agencies**

Missouri Department of Conservation  
Missouri Department of Natural Resources  
Missouri Department of Transportation  
Missouri Federal Assistance Clearinghouse  
Missouri State Emergency Management Agency

### **6.4.3 Local Agencies and Organizations**

St. Louis County Executive Charlie A. Dooley  
St. Louis County  
St. Louis County Department of Highways & Traffic and Public Works  
St. Louis County Parks and Recreation  
St. Louis County Council, Steven V. Stenger, Councilman, 6<sup>th</sup> Council District  
St. Louis County Council, Patrick M. Dolan, Councilman, 5<sup>th</sup> Council District  
East-West Gateway Council of Governments  
Great Rivers Greenway District  
Metro  
Trailnet  
Metropolitan St. Louis Sewer District  
City of St. Louis – Board of Public Service  
City of St. Louis – Streets Department  
City of St. Louis – Parks, Recreation, and Forestry

### **6.4.4 Municipalities**

City of Maplewood, James White, Mayor; Marty Corcoran, City Manager  
City of Shrewsbury, Felicity Buckley, Mayor  
City of Webster Groves, Gerry Welch, Mayor  
City of St. Louis, Francis G. Slay, Mayor  
City of St. Louis, Stephen Gregali, Special Assistant to the Mayor  
City of St. Louis, Thomas Villa, Ward 11 Alderman  
City of St. Louis, Larry Arnowitz, Ward 12 Alderman  
City of St. Louis, Fred Wessels, Jr., Ward 13 Alderman  
City of St. Louis, Donna Baringer, Ward 16 Alderwoman  
City of St. Louis, Terry Kennedy, Ward 18 Alderman

City of St. Louis, Joe Vaccaro, Ward 23 Alderman  
City of St. Louis, Scott Ogilvie, Ward 24 Alderman

#### **6.4.5 Elected Officials (Federal and State)**

Governor Jay Nixon  
U.S. Senator Roy Blunt  
U.S. Senator Claire McCaskill  
U.S. Representative William “Lacy” Clay, Jr., 1<sup>st</sup> District Missouri  
U.S. Representative Ann Wagner, 2<sup>nd</sup> District  
Missouri Senator Scott Sifton, 1st District  
Missouri Senator Joe Keaveny, 4th District  
Missouri Senator Eric Schmitt, 15th District  
Missouri Senator John Lamping, 24th District  
Missouri Representative Stacey Newman, 87th District  
Missouri Representative Jeanne Kirkton, 91st District  
Missouri Representative Michele Kratky, 82<sup>nd</sup> District  
Missouri Representative Gina Mitten, 83<sup>rd</sup> District  
Missouri Representative Genise Montecillo, 92<sup>nd</sup> District  
Missouri Representative Bob Burns, 93<sup>rd</sup> District  
Missouri Representative Jacob Hummel, 81<sup>st</sup> District

#### **6.4.6 Miscellaneous**

Ameren  
AT&T-Mission Wire Center  
CenterPoint Energy Gas Transmission  
Laclede Gas  
Missouri American Water Company

#### **6.4.7 Libraries**

Maplewood Public Library  
St. Louis Public Library – Buder Branch (Hampton Avenue)  
Webster Groves Public Library  
St. Louis County Library Headquarters  
St. Louis County Library – Weber Road Branch

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